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Telephone ENGINEER and MANAGEMENT

FEBRUARY 1947

Featuring

DAMAGED TELEPHONE CABLES SEND THEIR OWN ALARMS
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MINNESOTA INDEPENDENTS PLAN "GO AHEAD" PROGRAM
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MANAGEMENT QUICKIE
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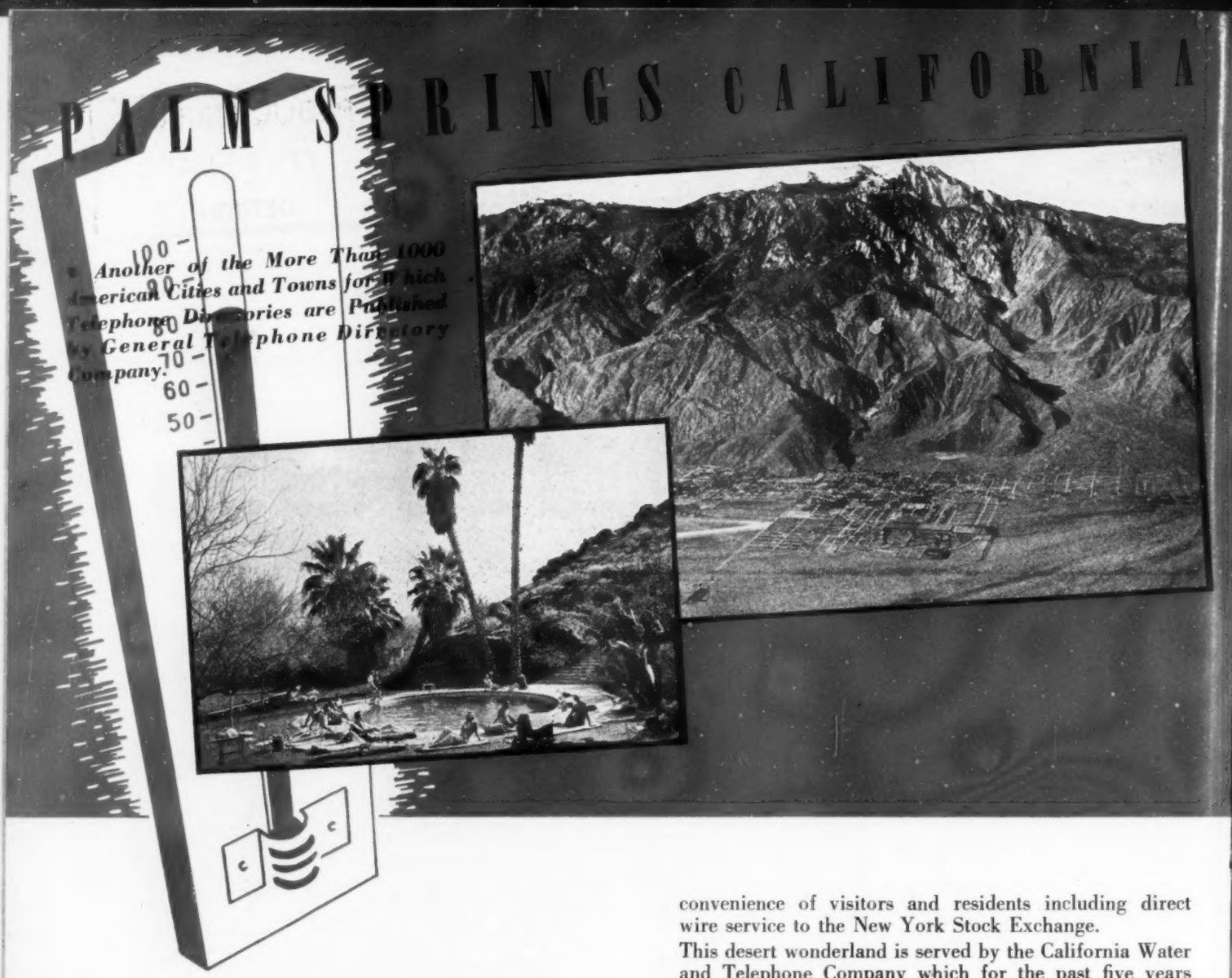
The Cover Picture —

Two Bell System technicians are seen making adjustments at radio transmitters at the Ocean Gate, New Jersey short wave station, where overseas radiotelephone messages are transmitted to Europe, South America and Panama as well as to ships at sea.



thermometer rex

In winter warm Palm Springs, "temperature is King," and a sunny old monarch he is, who brings out thousands of people each year to relax and play in this land of "Funshine."

Novelists classify this resort as romantic and glamorous; the M. D. says it's good for you. Whether it's for fun or for health, the facts remain that this area gets 90% of all sunshine possible, and the average noon temperature during the winter season is 81 degrees.

Here the outdoors is yours to enjoy all winter long. There are many things to do during the long winter days; you may get your sun bathing around a swimming pool, on the golf course, riding a horse, or just resting quietly in some flower decked patio. Or, if it suits your fancy you may take one of the very interesting side trips to the date gardens, or to one of the nearby canyons filled with native palms and cool streams.

The facilities of the town itself offer everything for the convenience of visitors and residents including direct wire service to the New York Stock Exchange.

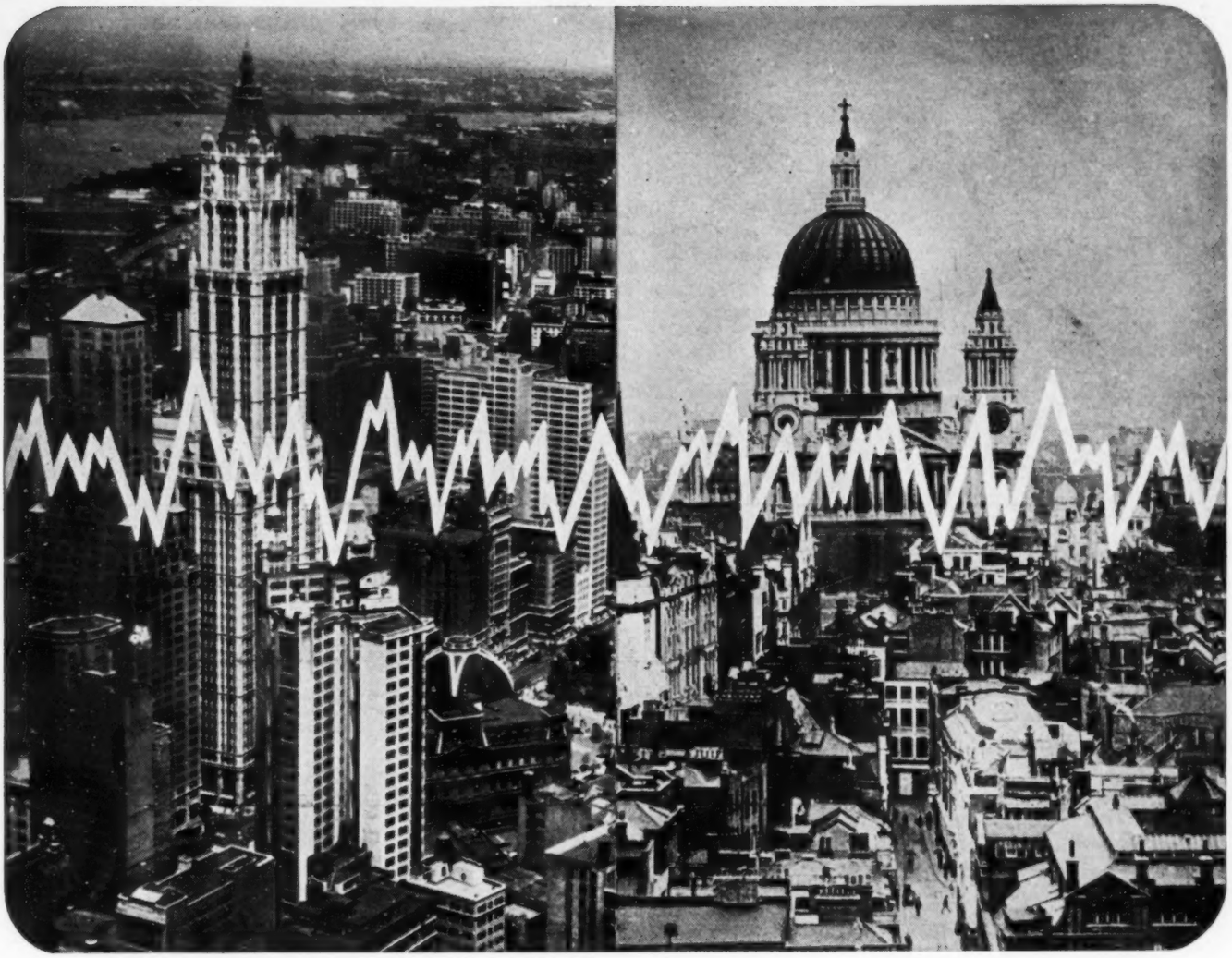
This desert wonderland is served by the California Water and Telephone Company which for the past five years has employed the complete directory publishing service of General Telephone Directory Company. During these years, the management of that Company has not only been relieved of all of the details of directory publication, but the directory has shown a substantial increase in advertising revenue.

We have an obligation to assist the telephone companies, whom we serve, in maintaining their public relations. This is done with trained representatives, accurate telephone directories and prompt delivery of directories to subscribers.

If you contemplate changing or revising your present directory procedure; if you would like to be relieved of all of the details of directory publication, including the sale advertising, layout, proof-reading, printing, and preparation for distribution we respectfully invite your inquiry.

GENERAL TELEPHONE DIRECTORY COMPANY

EASTERN OFFICE: 185 NORTH WABASH AVENUE, CHICAGO 1, ILLINOIS, TELEPHONE STATE 5478
WESTERN OFFICE: PRESS-TELEGRAM BUILDING, LONG BEACH 2, CALIFORNIA, TELEPHONE 672-22



19 YEARS AGO THIS MONTH

Two countries, for the first time, held a joint meeting by telephone

On February 16, 1928, two engineering societies, in New York and London, met together by telephone. Loud speakers in the two auditoriums were connected by the trans-atlantic telephone circuit, and both meetings were addressed successively by speakers in the two cities.

Joint sessions of widely separated assemblies are no longer unusual. In fact, the flexibility of modern telephone service is equal to practically any demand made upon it; for telephone progress moves forward with giant strides, meeting each new need as it arises in conformance with the telephone tradition of faithfulness and dependability.

In Exide Batteries you will find the same dependability for which telephone service is famous throughout the world. Since 1895, Exides have been proving themselves worthy of that trust.

Exide
BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • Exide Batteries of Canada, Limited, Toronto

VOLUME 51, NUMBER 2. Published monthly by Telephone Engineer Publishing Corporation. Office of Publication, Pontiac, Illinois. Executive and Editorial Office, 7720 Sheridan Road, Chicago, Illinois. Subscription: U. S., Cuba, Mexico, $2.00 per year; Canada $2.50, in all other countries, $4.00. Single copies, U.S.A. 20 cents; single copy JANUARY IS BLUE BOOK BUYERS' GUIDE $1.50. Entered as second class matter at the post office at Pontiac, Illinois, under the act of March 3, 1879.

Send in your problems on Construction and Maintenance

Yes! . . . Send us your problems on Construction and Maintenance . . . and we will endeavor to answer them along with dozens of others that have been submitted to our editorial staff in the big—

SPRING CONSTRUCTION and MAINTENANCE issue of

TELEPHONE ENGINEER and MANAGEMENT

April 15, 1947

This annual feature number will be jam-packed with timely and valuable information on construction, replacements, repairs, new products, new ideas, etc.

Special articles will be profusely illustrated . . . Line and Desk pages will present answers to many stubborn problems sent in by our readers.

All of this . . . plus . . . the usual editorial features that have caused TELEPHONE ENGINEER and MANAGEMENT to have more **paid** subscribers among managers, engineers and maintenance men than any other telephone trade journal.

Manufacturers and suppliers serving construction and maintenance materials will, as usual, feature construction and maintenance items available in their advertisements.

***Watch for the* SPRING CONSTRUCTION and MAINTENANCE**

issue of TELEPHONE ENGINEER and MANAGEMENT---April 15, 1947

Jay G. MITCHELL'S *Commentary*

Editor's Notice: The opinions expressed herein by Jay G. Mitchell are his own. The Editor reserves the right to disagree with any of them, editorially or otherwise in the columns of this publication at any time.

AUTO-MOBILE RADIO: The demand for radio communication to and from automobiles is becoming very notable. This is communication from the road to an established telephone and should be developed under guidance of the established telephone industry. This is not sentiment. In one week selected at random the Federal Communications Commission passed upon applications for the operation of 303 mobile units associated with 24 fixed transmitting and receiving land stations. These applications were filed by one telephone company and twenty-three taxicab and other non-communication enterprises. It is not difficult to envisage the confusion and service deterioration for all users of this form of communication certain to result unless the telephone industry accepts its obvious responsibility.

• • •

THE RADIO INDUSTRY: Now seems to be the time to revise our ideas of the communications industry. Transmission of the spoken word, because of its universal adaptibility, can never be superseded but is now following the development of new methods and equipment. American radio manufacturers can lead the world in design, development and production of radio equipment. In my opinion radio methods and radio equipment must become a prime concern of the telephone industry. The production of radio equipment in the year 1946 included about 14,000,000 home radio receivers with a retail value of approximately $700,000,000.00.

• • •

THIS MONTH OF FEBRUARY: February, 11, Thomas A. Edison, Benefactor.
February, 12, Abraham Lincoln, Benefactor.
February, 22, George Washington, Benefactor.

• • •

I DON'T BELIEVE THIS ONE MYSELF: Indignant Housewife to the Groceryman: "This honey is $2.50 a pound and last summer it was $1.50 a pound."

Groceryman to Indignant Housewife: "Well you know we have to pay the bees petal-to-petal wages."

SOCIAL INSECURITY: One of the highly technical enterprises that perhaps should be examined is the so-called Federal Social Security plan to which approximately 44,000,000 individuals look for old age protection. Since January 1, 1937 millions have paid 1% of their income to which employers have added another 1% until now the bookkeeping balance is approximately $8,000,000,000.00. It is said that retired persons who have consistently contributed can now draw about $37.50 per month per couple. Non-contributors who happen to be paupers can now draw approximately $64.30 per month per couple. There is, of course, no disposition to feel that $64.30 is excessive as a pension for a retired couple under present conditions. It is obvious that $37.50 per month is an inadequate pension for any couple under present conditions.

• • •

BUSINESS RECESSION: In my opinion there is not any serious business recession from the standpoint of the telephone industry on the horizon. Prices in some lines are beginning to break although Costs of Building appear to be approximately double pre-war and sometimes even higher. In view of the labor situation estimates for telephone plant construction should be most carefully prepared to reflect not only high material costs but also high increased labor costs.

• • •

TWENTIETH ANNIVERSARY: On January 7, 1927 a single talking radio telephone channel between New York and London was established. On January 7, 1947 by radio telephone conversations were held between New York, London, Frankfort am Main, Buenos Aires and Honolulu. It is reported that the radio telephone trans-oceanic system now carries more than one-half million calls annually and reaches almost sixty countries with access to more than 51,500,000 telephones. On January 1, 1947 there were at least 28,000,000 in the United States.

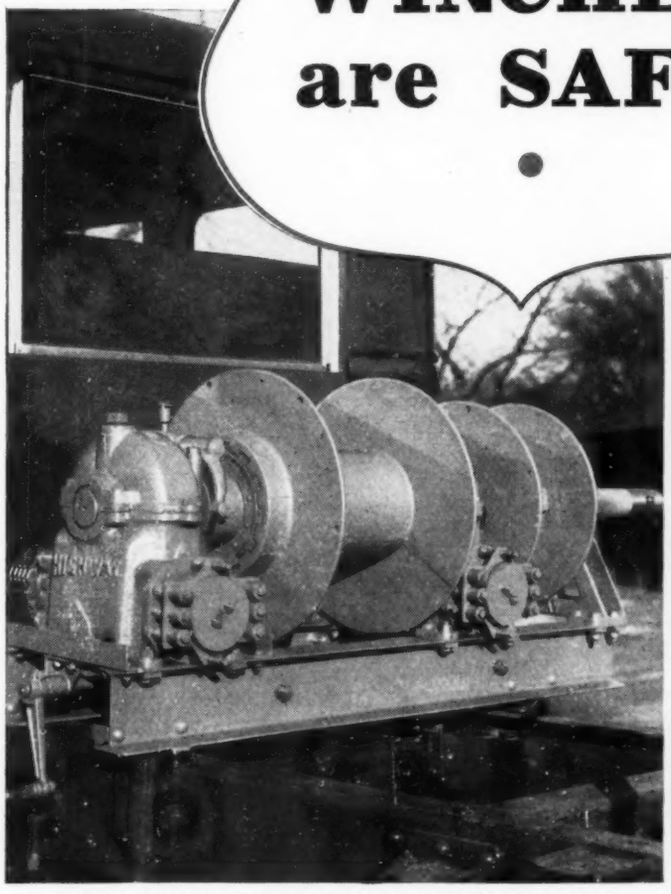
If and when the telephone industry organizes itself for automobile to telephone service, it should be possible to talk from an automobile on the road in the United States to foreign countries.

• • •

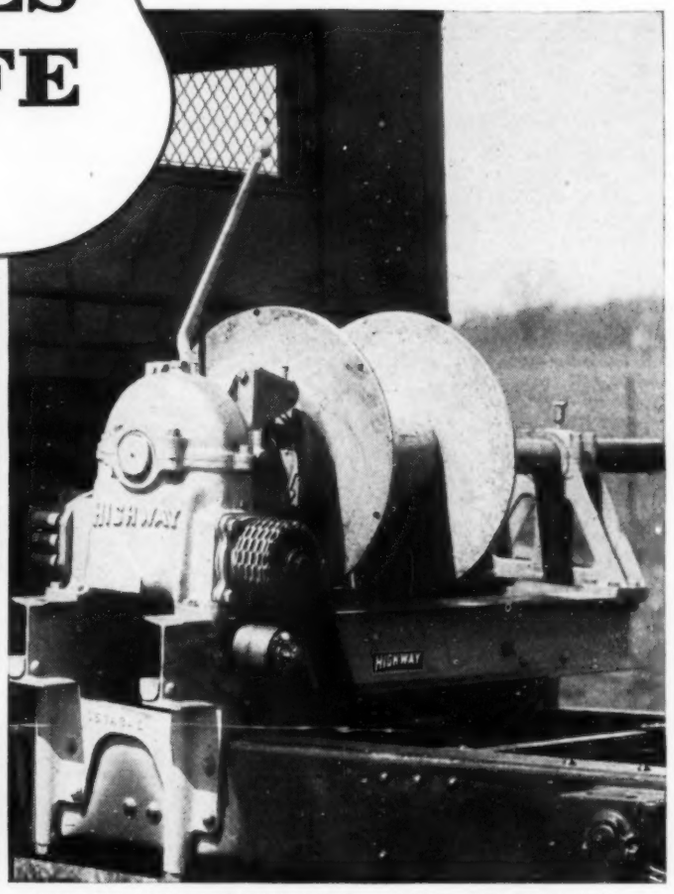
PENSION PLANS: An examiner for the National Labor Relations Board has held that company pension plans are properly subject to collective bargaining between unions and management. It is believed, however, that Congress will probably restrict collective bargaining on private pension plans. It is difficult for the laymen to see how private pension plans can be the subject of collective bargaining. Many telephone systems now have private pension plans.

Jay G. Mitchell

HIGHWAY WINCHES are SAFE



HIGHWAY MODEL L-12C-6 Double Drum Winch is a dual-purpose unit. 12" drum has spline type clutch. 6" drum is fixed type.



HIGHWAY MODEL L-12C Winch is a small compact unit specially designed for use on 1½ and 2-ton truck chassis.

Perhaps the biggest single recommendation for rugged Highway Winches is the extra measure of *personal safety* which has been engineered into them. They are powerful, certainly. They are dependable, naturally. But men who use Highway Winches have utmost confidence in them because their response is immediate. They pull when you want them to pull. They stop when you want them to stop. They're *safe* for operators.

You'll get the same smooth operation and uncompromising integrity, whether you choose the Highway Double Drum Model L-12C-6 or the small compact Highway L-12C. Both are built to Highway's famous high quality standards. Each delivers superlative performance within the range of loads for which it is designed.

Other famous Highway equipment includes line construction and maintenance bodies, earth boring machines, pole trailers, cable reel trailers and splicer's trailers, all designed for maximum convenience, efficiency, and service. Write us today about your own special requirements.

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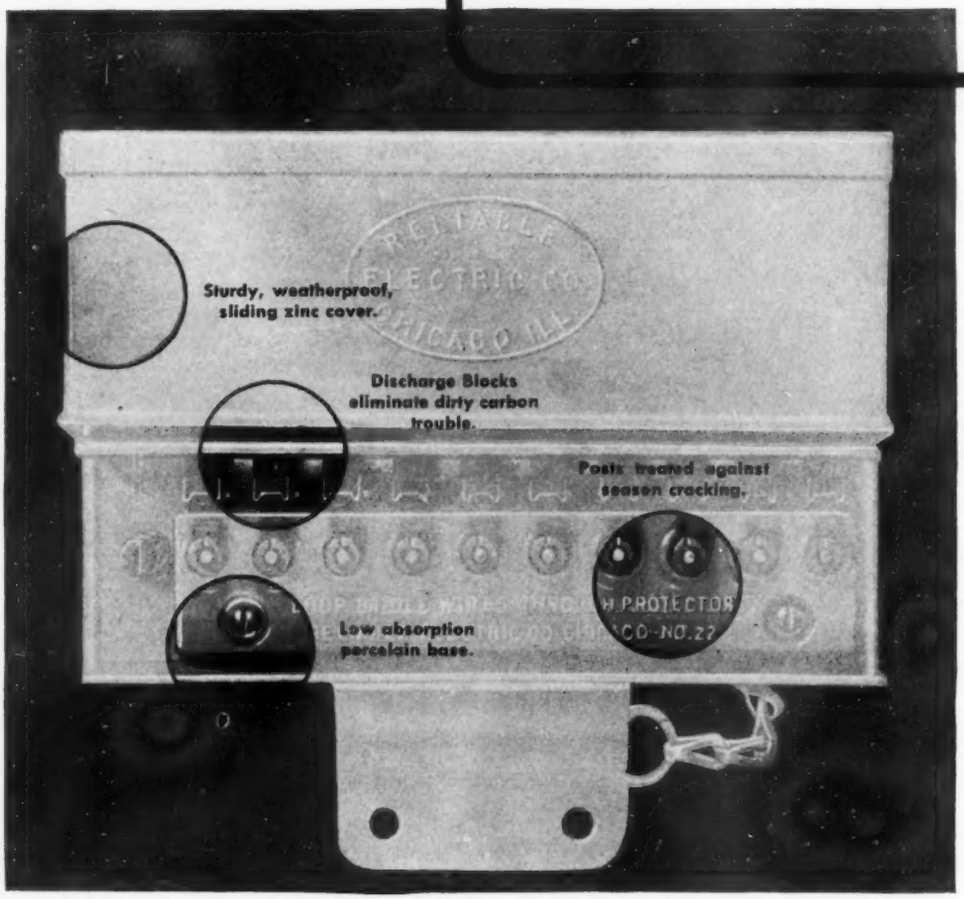
General Offices: **EDGERTON, WISCONSIN, U.S.A.**

"Reliable"

is the word for it!


Sturdy, weatherproof, sliding zinc cover.
Discharge Blocks eliminate dirty carbon trouble.
Posts treated against season cracking.
Low absorption porcelain base.

"—worthy of confidence; trustworthy"—says Webster, and what more could any user ask of any product. The Reliable 222 Outdoor Arrester is a very sensitive, yet rugged crossarm arrester with a ten-wire capacity. Mounted near terminals or along the line, the 222 Crossarm Arresters are of outstanding value where static is troublesome. Rugged, easy to install and thoroughly Reliable. Self-cleaning Sawtooth Discharge Blocks will protect without permanently grounding the line. Build for the future—specify "Reliable."

RELIABLE ELECTRIC COMPANY

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OVER 35 YEARS SERVICE TO THE TELEPHONE INDUSTRY

Really A CENTRAL OFFICE *Institution!*

Calculagraph devices have for over half a century been used for obtaining the essential time date for billing toll calls.

This exceptional performance record, in telephone service throughout the world, attests its suitability for that exacting use.

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ANNIVERSARY OF INTERNATIONAL TRUCKS!
1907-1947—Forty years of International Truck Service to Industry, Commerce and Agriculture.

INTERNATIONAL

Announcing—NEW MODELS INTERNATIONAL TRUCKS

Truck owners will operate them—drivers will drive them—*with greater pride than ever before.*

They're the new KB Models of International Trucks—outstanding products of advanced design, engineering and research—newly styled with flowing lines sharply accented by gleaming chrome, and with 95 features and improvements variously incorporated throughout 15 basic models.

And fully qualified to do their jobs with new economy, new ease of operation, and the rugged stamina for which Internationals are *famous!*

They're the finest values in more than 40 years of International Truck history. And International values have always been outstanding—so outstanding that for 16 years more heavy-duty Internationals have served American commerce and industry than any other make.

In the *complete* International Line there's the right truck for every hauling job. And back of every truck is *specialized* International Service—supplied by the nation's largest company-owned truck-service organization, International Branches—and by International Dealers everywhere.

Yes, the new KB Internationals will be owned and driven with pride—with pride and profit—because these rugged trucks perform with unbeatable economy.

TRUCK OPERATORS!
For details of the 95 FEATURES AND IMPROVEMENTS in various models of the new KB Internationals, see your International Branch or Dealer.

Motor Truck Division
INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue, Chicago 1, Ill.

Tune in James Melton on "Harvest of Stars" every Sunday! NBC Network. See newspapers for time and station.

INTERNATIONAL

INTERNATIONAL *Trucks*

"It Seems to Us"

Recent convention of Minnesota Telephone Association started the 1947 telephone conventions off in fine style. Large attendance of enthusiastic telephone men and women showed interest of Minnesota Independents in efforts of telephone industry to catch up on held orders and bring service of improved quality to everyone who wants it.

•

USITA's Executive Vice-President CLYDE BAILEY hit general theme of the convention right on the nose when he said: "We can not spread telephone service over all the people who want it by making applesauce. But we can continue to exert maximum effort, consistent with the availability of critical materials and manpower in order to acquit our public obligations at the earliest possible date. It is the duty of the industry to do this." . . . For a complete report of the Minnesota Convention read the summary in this issue. You'll find plenty of good, sound workable ideas.

•

TOM MACOUBRAY, dean of telephone accountants in Minnesota, has the reputation of being one of the most gracious hosts in that great state. As a guest of Toms at the January convention and in company with another Scot, PETE FERGUSON, we are now perplexed just where all those stories regarding Scotsmen originated. Not in Minnesota, we assure you.

•

"JIGGS" NAYLOR, well known Independent telephone man of Kansas City, is a hobbyist that has attained a much deserved reputation as a magician. At the Iowa convention last fortnight "Jiggs" provided the comedy relief in an otherwise heavy business program. Wonder how he is in a poker game?

•

We often hear someone express the hope that he will someday inherit a fortune from a rich uncle, and perhaps oftentimes we wish that some eccentric but rich uncle would add our monicker to his *"Last Will And Testament."* At least one telephone man had that luck lately but news of an unexpected $100,000 inheritance did not upset RICHARD MOODY, coin box collector for the Michigan Bell in Saginaw. Said Moody: "Naturally I was pretty excited. But there isn't going to be any change in the Moody household."

Telephone ENGINEER and MANAGEMENT

THE NATIONAL TELEPHONE MAGAZINE

Volume 51 Number 2 Since 1909 February, 1947

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KEEP SATISFACTION...

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ON THE *UP* and *UP*

with KELLOGG 1000 SERIES MASTERPHONES

Imagine—pleasing subscribers and saving money by doing it! Sure, it sounds like wishful thinking . . . yet that's exactly what you accomplish by installing Kellogg "1000 Series" Masterphones.

The amazingly simplified design of these modern telephones will increase earnings for years to come. Installation and maintenance are faster, easier, more economical. Because of fewer, standardized and interchangeable parts, your inventory hits rock bottom. Because all components are quickly accessible—easily assembled or removed in a matter of minutes — your routine maintenance costs are slashed to the bone.

And as for your subscribers, even the hardest to please will have nothing but praise for these advanced instruments. Modern yet dignified styling . . . superior reception and transmission . . . clear, ear-pleasing ringer tone . . . day-in and day-out operating dependability . . . all assure greatest satisfaction to present subscribers—will help you win new ones.

REFER TO THE X-RAY BOOK FOR THE INSIDE STORY

This remarkable book literally takes a Masterphone apart—reveals before your eyes ***why*** installation, adjustment and servicing are so easy and simple . . . ***how*** a single base plate and two housings take care of all types of subscriber services . . . ***where*** all the easily accessible components are mounted . . . ***what*** "constant protection" means in the universal circuit. If you haven't a copy, send for yours ***today***. It's free. . . . It's invaluable. Simply jot down your request on your company's letterhead.

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OPERATING RELIABILITY

EASE OF INSTALLATION AND SERVICE

Both desk and wall Masterphones—for manual common battery, dial common battery or Magneto Service—use the same base plate. All components are mounted on the base plate and are easily accessible.

IMPORTANT NEWS ON MASTERPHONE DELIVERIES

Manual Telephones

Good news! Increased production now makes it possible to schedule your deliveries of Manual Masterphones on a *monthly basis*. All you do is tell us *how many* telephones you need for the next 12 months and *what months* you want them shipped. We'll set your order up on our production basis to ship accordingly.

Dial Telephones

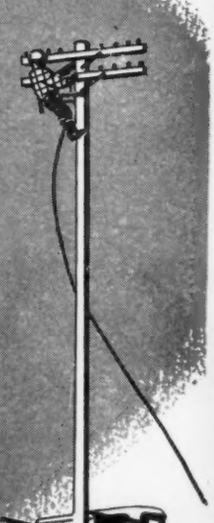
In the very near future, watch for a similar announcement on Masterphones with dials, inviting you to name your own monthly delivery dates.

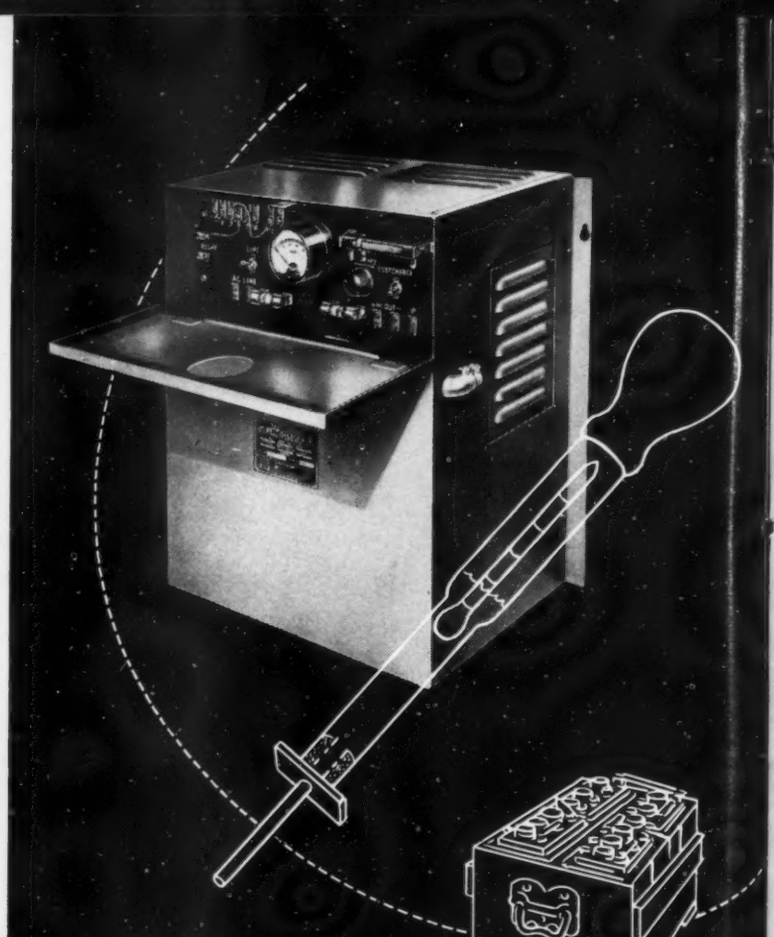
Do This Now

The important thing to do is to get your order entered *now*, so we can reserve a place on our production schedules. This applies to both Manual and Dial Masterphones. Give your Kellogg representative your estimate of total requirements of each type for the year. Or write us direct—the sooner the better!

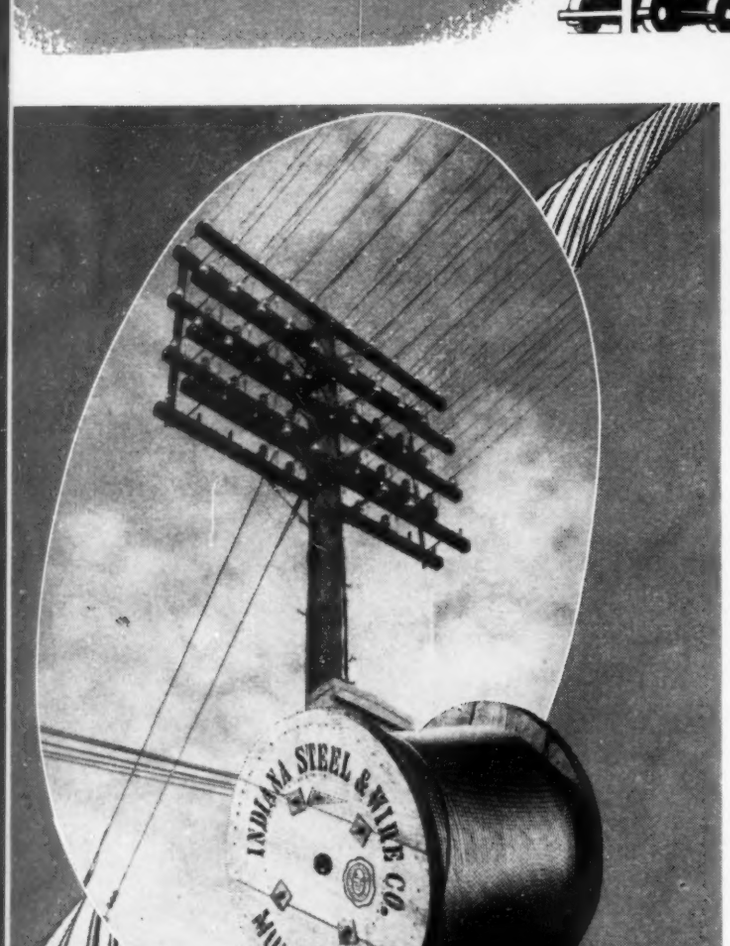
The Satisfaction Lasts When You Buy Products

Recommended and Guaranteed by KELLOGG

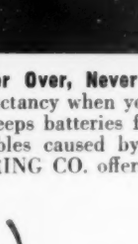




Never Over, Never Under. Storage Batteries reach their maximum life expectancy when you use the RectiChargeR automatic method of charging. It keeps batteries fully charged at all times and puts an end to operating troubles caused by under- or over-charging. RAYTHEON MANUFACTURING CO. offers this sure method to keep storage batteries "healthy".



The Time-Tested Strand. Lasting protection against corrosion is provided in Indiana Crapo Steel Strand, thanks to its heavy, ductile, tightly-adherent coating of zinc, applied by the famous Crapo Galvanizing Process. This, plus rugged strength, are your assurance of long life and low maintenance. Made by INDIANA STEEL & WIRE CO.



There's three-way satisfaction when you concentrate purchases of line supply and construction materials at a single, responsible source: (1) The *quality* is right—all products are backed by the famous Kellogg DOUBLE GUARANTEE; (2) The service is right—orders are intelligently handled by experienced people; (3) *Delivery* is right—orders are shipped from the nearest of over 50 strategically located distribution points.

KELLOGG SWITCHBOARD & SUPPLY COMPANY

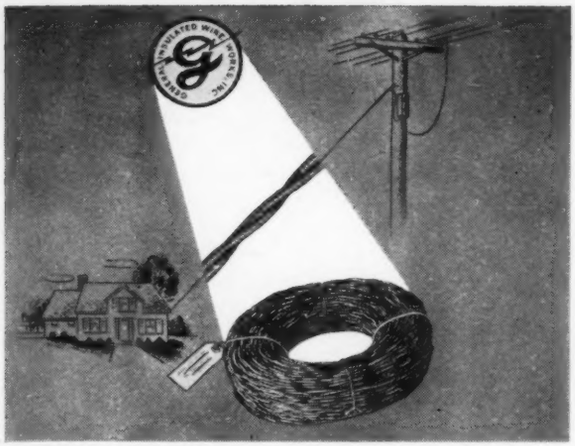
Branch Offices: Kansas City, San Francisco, St. Paul, Los Angeles

Factory and General Offices: 6650 S. Cicero Avenue, Chicago 38

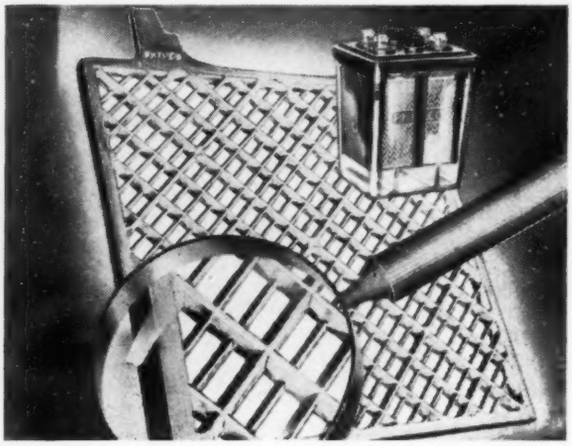
For Service from a Nearby Distribution Point

Order Your Line Supplies from

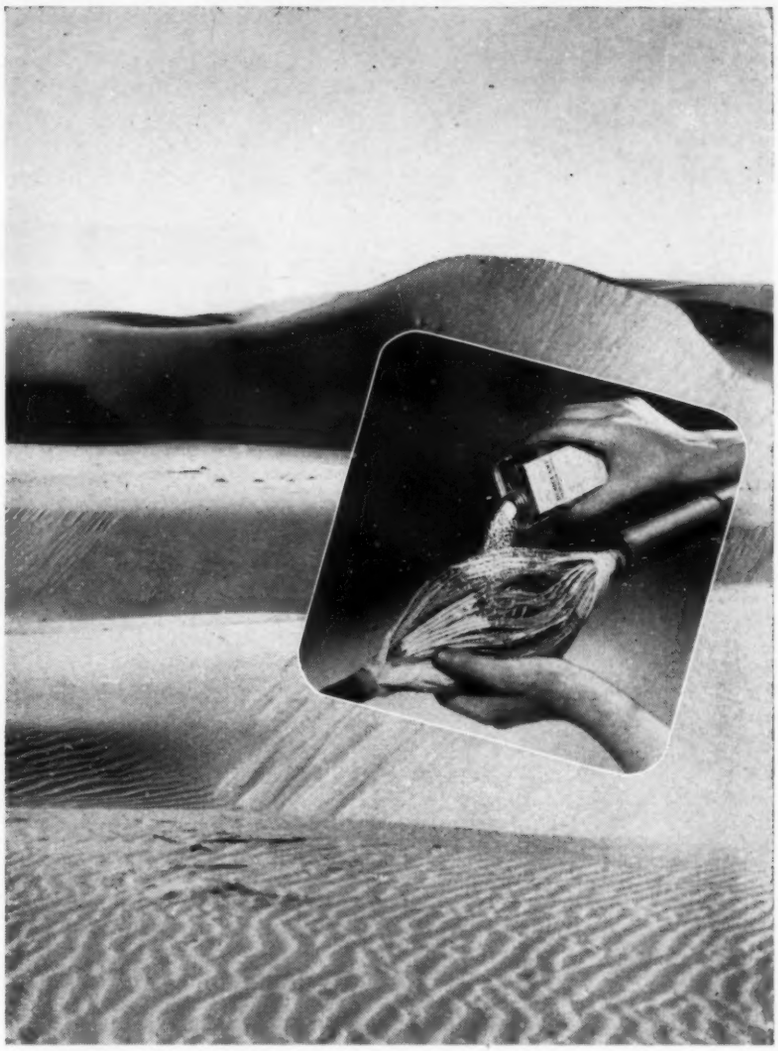
KELLOGG



Increase Drop Wire Life 30% by using GENERAL INSULATED WIRE WORKS Bronze Drop Wire. This high-conductivity wire is drawn of solid non-corrosive bronze and covered with special "armored" insulation for lasting all-weather protection. Highly flexible . . . easy to work with.



For Full Float Service. Every PHILCO Telephone Battery has the famous Floté grid developed specifically for full float service. The design and metal in Philco Floté grids represent a marked advance resulting in greater electrical efficiency, the elimination of low cells and longer life.



Drier Than the Driest Desert! Drierite Desiccant is the safer, better way of drying out splices in lead covered cables. After splicing it, all you need do is bind a cotton gauze under the splice and sprinkle Drierite granules in among the conductors. This W. A. HAMMOND DRIERITE CO. product readily absorbs all moisture, making the splice about the driest part of the entire cable line.

Long Life Expectancy is built into pressure-treated Southern Pine Poles and Crossarms. Carefully and thoroughly treated by AMERICAN CREOSOTE WORKS, INC., these poles have the extra durability required for dependable service under toughest climatic conditions.

No More High Resistance Joints and intermittent open-and-closed circuits, when you use Kester Rosin-Core Solder! It seals joints permanently, protects them against service troubles. Made by KESTER SOLDER CO. and used by Kellogg and many other leading manufacturers of communication equipment.

Dependable — in Any Weather! Hemingray Insulators are made to withstand severest weather. They defy rain, snow and sleet. Products of OWENS-ILLINOIS GLASS CO., many of these famous insulators are still serving after 20, 30 and even 50 years. Shown is No. 9.

1 ALL-BAKELITE CASE . . . . . →

2 SAME HOUSING FOR WALL OR DESK MOUNTING →

3 ALL-PURPOSE ALNICO GENERATOR . . . . . →

4 NEW HANDSET UNIT . . . . →

NO OTHER MAGNETO TELEPHONE HAS T

You get more for your money when you install this Leich 86 magneto telephone. It's the only magneto telephone with the all-purpose Alnico generator, the only magneto wall telephone wherein the desk set can be separated from the generator box and the same two units used to make a table model with a separate generator box. Also, this Leich No. 86 is the only complete magneto wall telephone with a modern, streamlined all-Bakelite case.

Tens of thousands of these famous 86 telephones are in service. Telephone men tell us that their subscribers, both city and farm, are enthusiastic about their attractive appearance and excellent talking qualities. And, the telephone men themselves like them because they require so little maintenance.

Here indeed is the wise investment for the magneto exchange. Yet, this better, more modern, more practical instrument costs no more than the average magneto telephone. Order one today and try it in your own home. Leich Sales Corporation, 427 W. Randolph St., Chicago 6, Illinois.

IN NO OTHER BUSINESS . . . . I NE E

MANUFACTURERS OF TELEPHONE ITC

LEICH

Gleaming black Bakelite is used for the entire case. It's more attractive and more modern. Ten years from now this telephone will still be in style.

All that's necessary to convert the No. 86 into a desk set with a separate generator box is to separate the two units, put a cover on the generator box, felt base on the handset and add a handset stand cord. No new housings to buy.

This Leich Alnico generator is only half as large as a standard 5-bar generator, yet is just as powerful and can be used on long heavily loaded lines. Thus this telephone can be installed wherever you previously used a 3-, 4-, or 5-bar generator model.

Now the 86 telephone is equipped with this new, improved, streamlined No. 100 handset unit. This unit has a capsule type transmitter and receiver which are merely dropped into place to make contact. Tests show that it gives a more faithful voice reproduction and improved reception.

AS THESE EXCLUSIVE LEICH FEATURES

Send for this new catalog

Contains full details on the No. 86 and other Leich Magneto telephones. Leich Sales Corporation, 427 W. Randolph St., Chicago 6, Illinois.

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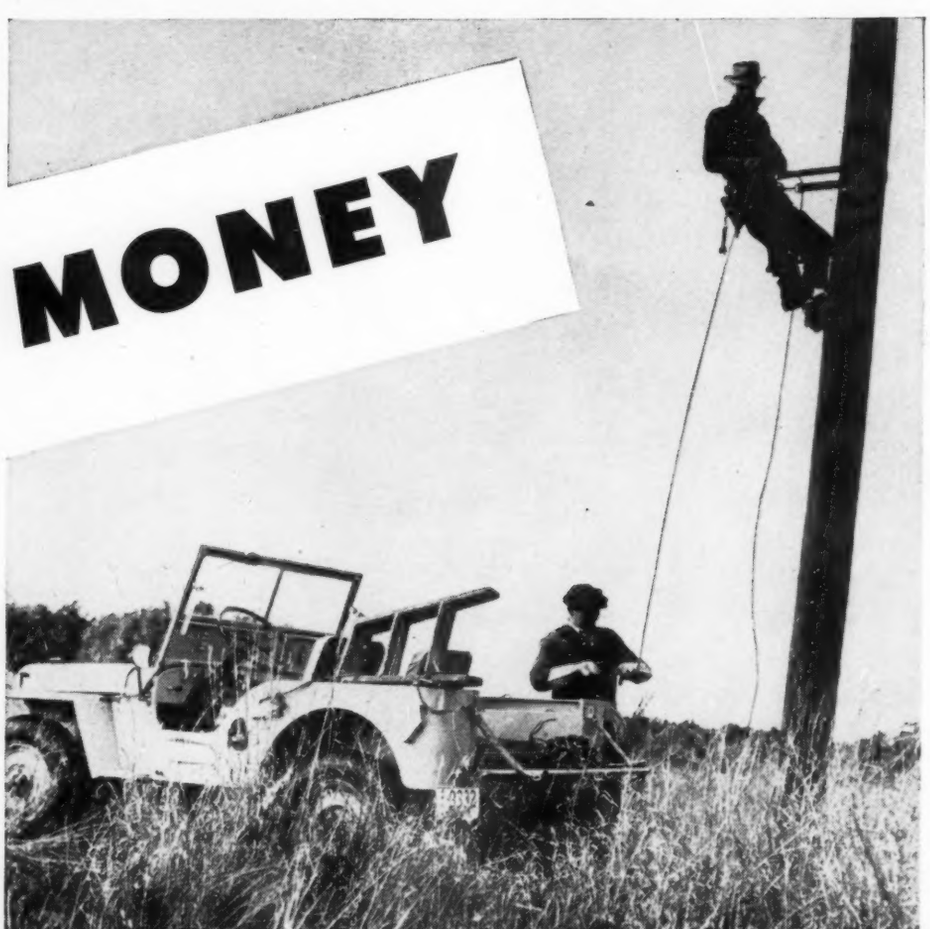
ONE WITCHBOARDS AND RELATED APPARATUS SINCE 1907

SAVE MONEY

this year on weed control!



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Low cost. Highly recommended for killing broad-leaved weeds in lawns to beautify parks, streets, and company buildings. Available both as a liquid and a powder.

Esteron 44—a powerful 2, 4-D Weed Killer

Especially useful against many types of woody plants, such as wild rose, poison ivy, mesquite and sprouts of many other woody species. Ideal for use on cut-over land along right of way.

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"Chemical Mower" for weeds along canals, ditch banks, fences and roads. Kills most annuals completely. Destroys all weeds and grass above ground, leaves roots to prevent soil erosion.

Now you can destroy weeds by the million—for less money! No more mowing, digging or burning—just spray them with the right Dow Weed Killer—and watch them die! Weed control with chemicals will cut your maintenance costs way down—turn a troublesome, expensive job into a simple, fast-moving one.

Maintenance men who want *results by the acre* can depend on Dow products: 2-4 Dow, Esteron 44 and Dow Contact Weed Killer—each tested and proved for its special task. Produced and packed by The Dow Chemical Company—foremost producer of hundreds of essential chemicals.

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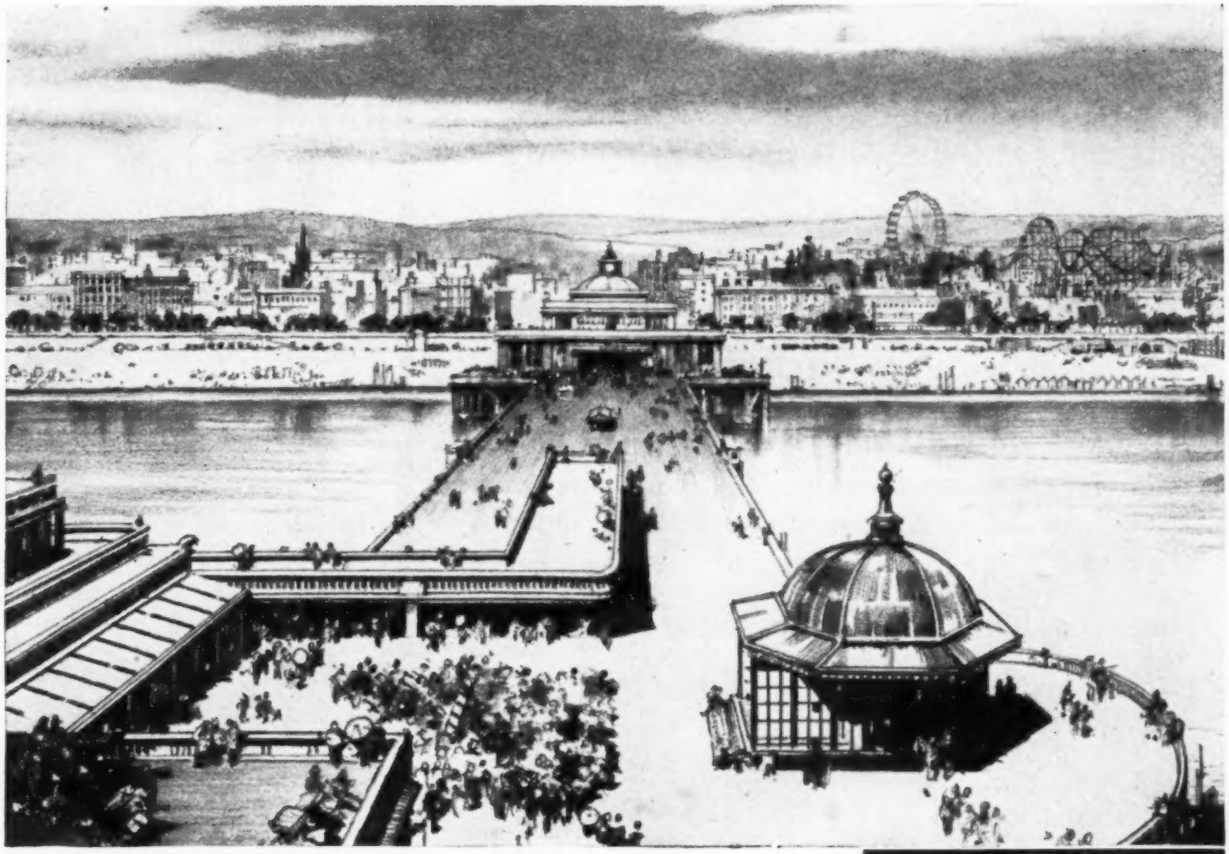
LINK THE WORLD'S RESOURCES . . .



IN THE HOLIDAY RESORTS . . .

The high tempo of modern business life demands that those who work must play. To amuse, house and cater for them others must work and thus a huge business is built up—the Holiday Industry—with one feature peculiarly its own. The activities of a holiday town are seasonal and the promenades, beaches and gardens, thronged at one period of the year, may be almost deserted at another. Upon the efficiency of telephone communications the earning capacity of the resort greatly depends. The service provided must therefore be economically capable of variation from intense activity to comparative inactivity.

Strowger Automatic Telephone Equipment possesses great flexibility in both operating characteristics and physical construction. Its design is such that only the minimum of equipment need be installed, yet even periods of heavy "peak" traffic can be handled without difficulty. Elimination of human operators ensures that there are no seasonal employment problems, nor high salary overheads to be carried when decreases occur in the call rate. Strowger Automatic Exchanges can be provided for any number of subscribers' lines and are capable of rapid extension as the need arises.

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STROWGER WORKS, LIVERPOOL 7, ENGLAND

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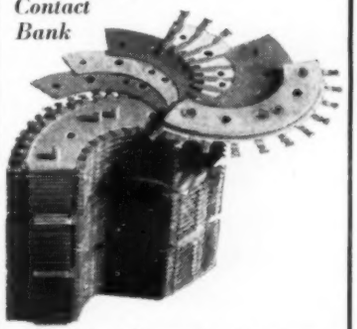
The Strowger Contact Bank



- *It is specially constructed to prevent difficulties arising through warping or expansion of material.*
- *It consists of ten double layers of contacts set radially, each layer having eleven separate and insulated contacts.*
- *The Bank contacts are arranged radially so that switch wipers need travel only a short distance between contacts.*
- *Each level of contacts is mounted in one fan-shaped piece to facilitate assembly and alignment, after which one shearing operation segregates the contacts.*
- *Phenol fibre insulators are used.*
- *Levels are screened each from the next by aluminium spacers bonded and connected to earth.*
- *Levels are arranged with only .015" allowance between them.*
- *Contacts are made of brass and have burnished wiper ends.*

New! BRIDLE WIRE

of Famous TELEPRENE Construction

TELEPRENE BRIDLE WIRE,

a suitable running mate for TELEPRENE DROP WIRE, is now available with *LongLife* NEOPRENE jacket with No. 18 Soft Copper Teleplated Conductor.

(2 Conductor Wire, Whitney Blake Cat. No. 18 TBC-2)
(3 Conductor Wire, Whitney Blake Cat. No. 18 TBC-3)

New installations are now being made with this New Trouble Free Bridle Wire.

For MODERN systems that "Stand the Gaff" specify The Whitney Blake unbeatable combination.

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ON OUR PARTY LINE

TAXI PHONE COLLECTOR

A NEW type of thief hit headlines in Omaha, Nebr., papers when some malicious person suddenly started yanking taxi telephones out "by the roots." This character was first noticed when switchboard signals indicated that seven of cab company phones were in dire trouble. Investigation by drivers revealed that the phones had been torn from their mountings. The following day puzzled police were looking for somebody who collects telephones, or a would-be cab customer who went mad while standing on a windswept corner looking for a cab.

CARPHONES PICK UP LION'S ROAR

IT WAS quite a day in Memphis, Tenn., and the entire town recently took time out to take a peek at Southern Bell's "*telephone-on-wheels*" service. Following a two-hour dedication of the town's new mobile radiotelephone service, in which the only bobble was a wrong number obtained by the Memphis mayor, one of the new subscribers motored to the Zoo and relayed the roar of a lion and the sqawky conversation of a talkative parrot.

Memphis is 4th Southern city to get "*carphone*" service and started with four subscribers—an ambulance service company, a newspaper, an auto service company, and a detective agency.

OUT OF THE PAST

SOME editorial writer on the staff of the *Charlotte Republican Tribune* went off the deep end the other day and stated that in the early days of the telephone, girl operators soon replaced the boys because "girls were steadier and did not drink beer." One of the recorders of the industry's history tells us the beer capacities of the young boys may have contributed to their downfall as operators but the real reason was the fact that some of the boys were rough talking, impolite and a few were "even in favor of administering a good old fashioned cussing to any subscriber who had the gall to complain about a slow connection or wrong number."

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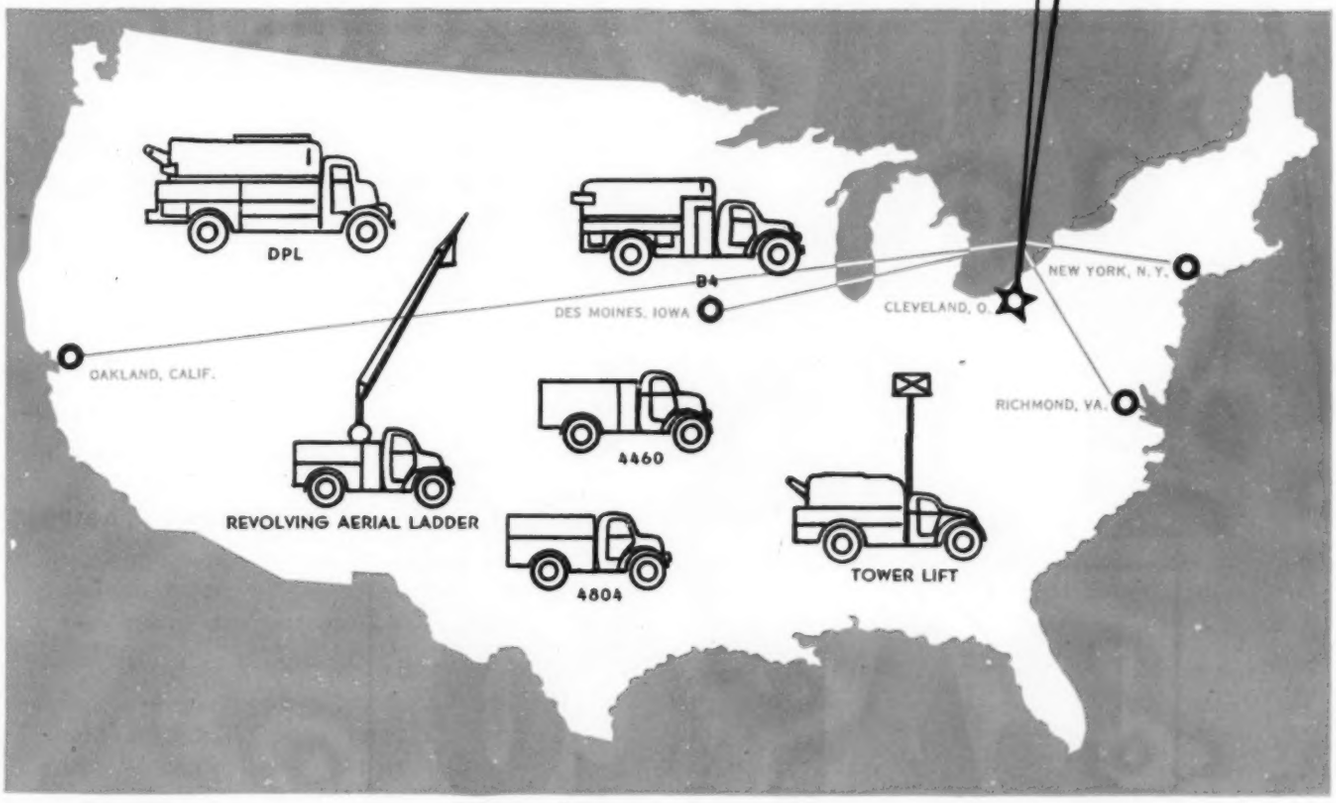

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EDITORIAL

Profit and Loss

BY THIS time most Independent telephone companies have completed their bookkeeping for the year 1946, and the management has before it the final financial statements for the year. These statements presumably show the profit—or loss—resulting from the company's operations for the year.

What those statements really show, of course, are those things in the company's operations that can be definitely expressed in figures representing dollars and cents.

They do not show the condition of the plant, at the end of 1946, as compared with that condition at the end of the preceding year. They do not show the lack, if any, of plant or other facilities at the end of 1946, for taking care of the demands for telephone service in the company's operating territory.

They do not show such intangible things as the relations of the business, at the end of 1946, with the public it serves, and with its employees.

All of these things—the intangible as well as those tangible things that are expressed in dollars and cents figures on the company's books—are a part of the company's real balance sheet, and have a bearing on the question of what its real profit—or loss—was for the year 1946.

When they are all appraised at their true value, it will be seen that the war is not yet over for the telephone industry.

No doubt a considerable number of Independent telephone companies—particularly companies that paid Excess Profits Tax in 1945—showed a higher amount of net earnings for 1946, in dollar and cents, than for preceding years; some probably showed the highest net earnings in their history. But it is well to take note of the fact that where this happened, it happened only because of a combination of circumstances that is not likely to be repeated, and that, therefore, the year 1946 is no criterion, as to net earnings, for 1947 or subsequent years.

The fact is that, with many companies, the rate of net earnings began to slide off shortly after the middle of 1946, as increased expenses began to catch up with the increased revenues occasioned by heavy installations of telephones and the continuance of toll revenues at a high level. If the net earnings results of the final months of 1946 are taken as the basis of prospective net earnings for 1947, the prospective net results for 1947 are in many cases very disappointing unless the company, wisely foreseeing what is coming, has obtained new exchange rates sufficiently higher than the old to meet the new higher level of expense upon which it is now operating.

Further, many companies now have before them tasks that do not show up on a financial balance sheet. They must, for instance, bring their plant up to prewar standards of quality and efficiency. They must restore relations in those cases where they have been impaired by the company's inability to provide, quickly, all the service demanded. They must catch up on deferred maintenance, including the removal from plant of the make-shift additions made to it during the war years, when standard types of equipment and material could not be obtained and any old type of construction had to be used in order to extend badly needed service.

All of these things need to be taken into account by the management of a telephone company when it decides whether or not its present rate of gross revenue is adequate to meet the present and prospective higher level of expenses—and also need to be taken into account by regulatory bodies when fixing telephone rates.

THE XY SWITCH . . .

HEART OF THE

STROMBERG-CARLSON

XY SYSTEM

Since the universal Stromberg-Carlson XY Switch serves interchangeably as a *Line Finder*, a *Selector* and a *Connector*, it is truly the heart of the Stromberg-Carlson XY System . . . a single unit whose triple application produces instantly recognizable economies.

The XY Switch is built with watch-like precision for fast, efficient operation and long life. Smaller and lighter than any other switch of its type, it reduces both the bulk and weight of complete switching equipment . . . permits smaller, less expensive exchange construction. Servicing time and costs are lower, too, since every XY Switch is instantly interchangeable.

Contact your Stromberg-Carlson representative *today* for complete details.

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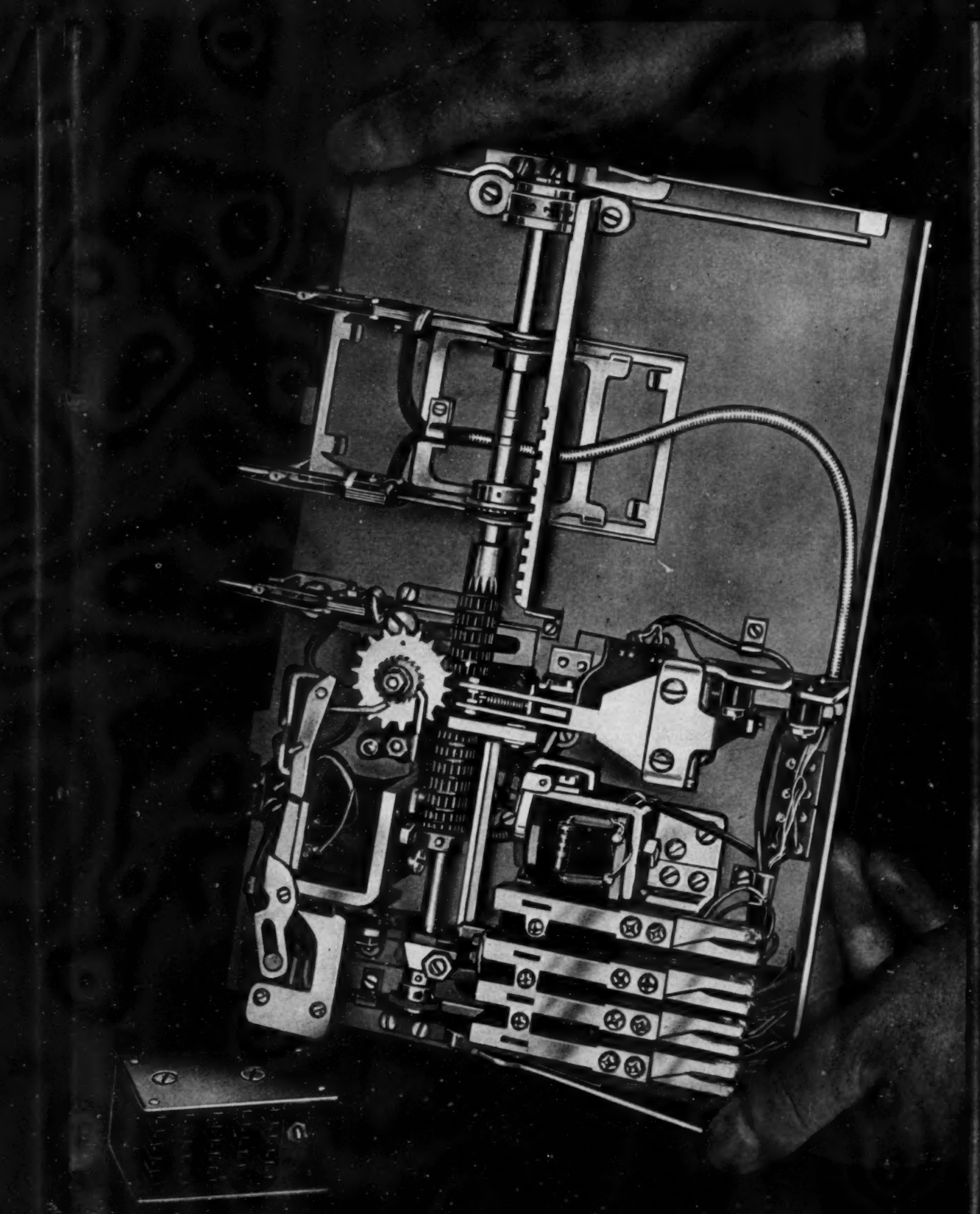
TELEPHONES, SWITCHBOARDS AND INTERCOMMUNICATION SYSTEMS • SOUND EQUIPMENT



PLUG-IN Flexibility

Because Stromberg-Carlson XY Switches are interchangeable and have *Plug-In* construction, they can be quickly rotated —Finders into Selectors, Selectors into Connectors, Connectors into Line Finders, and so on—to give balanced wear and add years of life to the complete XY System.

Because Stromberg-Carlson XY Circuit Plates have the same *Plug-In* construction as XY Switches, the extra rack capacity of a switchboard can be put into use almost instantly by plugging in additional XY Switches and Circuit Plates.

Because Stromberg-Carlson XY Switches can be plugged-in as Line Finders, Selectors and Connectors according to your needs, the maintenance investment in extra switches is reduced 66⅔%.

Because Stromberg-Carlson XY Switches can be changed or interchanged at will, they bring you the additional advantages of the Vertical Bare Wire Bank Multiple with its automatic switch wiper alignment and virtually dustproof construction.

NEWS BRIEFS

Ohio Convention Dates Announced

Lloyd C. Wright, secretary of the Ohio Independent Telephone Association has announced that the dates for the Ohio 1947 annual convention have been definitely fixed as April 22 and 23 at the Deshler-Wallick Hotel in Columbus.

◆

Thomas Named Chief of New Electronics Division

In the passing parade of War Assets Administration officials, H. C. Thomas, former assistant chief of the Electronics Division, Office of Aircraft Disposal, now heads the electronics agency. He succeeds George H. Moriarity, who was moved up to the post of assistant deputy WAA Administrator in charge of Aircraft Disposal's plans and policies.

Meanwhile, the WAA, perennial target of Congressional investigations, faces another probe from a joint subcommittee of the House and Senate Committees on Expenditures in the Executive Department.

◆

New Honors For Prof. Armstrong and Col. Sadtler

Professor E. H. Armstrong, the noted inventor of the Frequency Modulation system of radio, was presented the Medal for Merit, the highest civilian decoration which is awarded by a presidential citation, January 28 in a ceremony at the offices of the Chief Signal Officer of the Army. Major General Harry C. Ingles, Chief Signal Officer, conferred the medal upon Professor Armstrong and his citation, signed by President Truman, recounted the FM inventor's contributions to the war effort in the donation of his patents without any strings and in his advice and help in the development of the all-important radio-communications facilities.

The War Department has announced award of the Oak Leaf cluster to the Legion of Merit to Colonel Otis K. Sadtler, Director of the Plans and Operations Division in the Office of the Chief Signal Officer. His medal was likewise presented by General Ingles. The award was made for Colonel Sadtler's leadership in perfecting and directing Signal operations of the Second Army's mobilization training program.

◆

REA IN HOT WATER . . .

Rural Electrification Administration seems destined not only for economy slashing in Congress but also for some investigatory fire. Alleged propaganda circulars assailing G.O.P. policies on rural electrification aroused ire of Rep. Clare Hoffman of Michigan, chairman of House Executive Expenditures Committee, who plans to ascertain REA aims. This buries still further proposal of REA-financed rural telephone projects —in fact, Senator Hill is felt to have virtually no interest and Rep. Poage of Texas may reintroduce last session's bill but will not push it and is known to be amazed at Telephone industry's own progress in farm installations.

Indiana Independent Plans $500,000 Construction Program

The Citizens Independent Telephone Company, Terre Haute, Ind., has announced a construction program for 1947, that will approximate a total cost of more than $500,000. Included will be the installation of a new central office on the third floor of the company's present building in Terre Haute which will be known as the "Lincoln" room. The office will provide for an ultimate capacity of 10,000 lines. This expansion and extended facilities will provide service for the more than 3,000 telephone applications now on file with the company and establish means for future growth.

According to officials, the name Lincoln was selected after considerable study for it was thought the name best met the mechanical, clerical and phonetic requirements of the company, and for the historical significance as the Civil War president several times visited Terre Haute which was located between his Illinois residence and his Indiana home. The work on this new office is expected to be completed this year and subscribers assigned to it will be called by dialing the prefix "L" before dialing the digets of the number.

◆

Iowa Independents Boost Rates

Rates in all Iowa towns served by the *Central Iowa Telephone Company* were increased February 1.

The new rates increase the monthly cost of business, one-party wall from $2.25 to $2.75; business, extension, wall from 75c to $1.00; residence, one-party wall from $1.65 to $2.15; residence, two-party wall $1.65; residence, extension wall from 50c to 75c; rural grounded wall from $1.50 to $1.75, and rural metallic wall from $2.00 to $2.25.

The *Wyoming (Iowa) Telephone Company* has raised rates 50 cents a month for rented telephones and 25c a month for shareholders. The renters will now pay $28.08 a year, including the tax, while the stockholders will pay, including tax, $24.57 a year.

HERE IT IS...

BETHLEHEM'S NEW "BUTTONHEAD" SERVING TOOL

Yes, it's a first cousin to Bethlehem's original serving tool that for several years has proved so useful in guy-line work. Employs the same easy principle in making dead-end serves . . . but it's better in every way than its predecessor. More durable. Easier to handle. Gives tighter, stronger serves.

Note the new "buttonhead" feature. The button is the secret of those tight, snug serves that hold beyond the useful strength of the strand. In action, the rounded grooved neck slides smoothly along the serving wire without nicking or harmfully displacing the wire's ductile coating.

Making serves with this durable drop-forged tool is simplicity itself. Merely hook one end of the serving wire on the strand; then, engaging the tool, begin to wind with an easy rotary motion. A 10-ft coil of 11-gage bethanized wire is enough for 50 turns—the usual number. We recommend the serving tool for use with *bethanized* strand—the strand that's zinc-coated by Bethlehem's exclusive electrolytic process. Why not ask for further details on both the tool and the strand? A Bethlehem representative will be glad to demonstrate.

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On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

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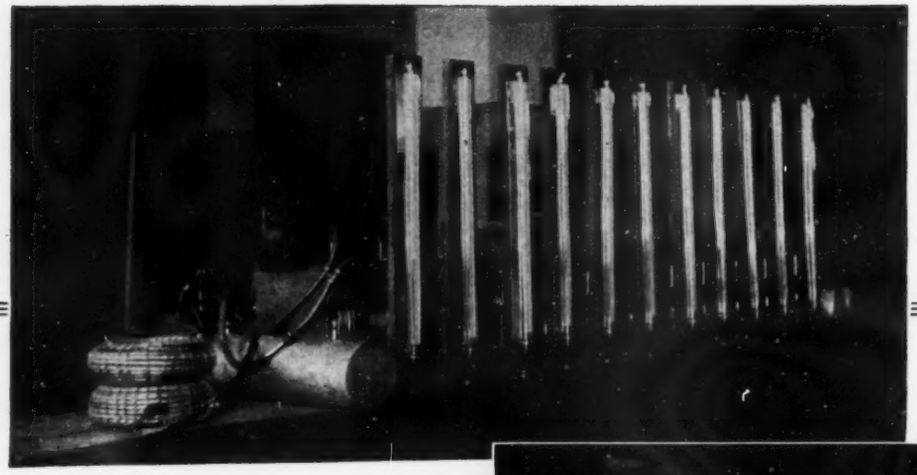
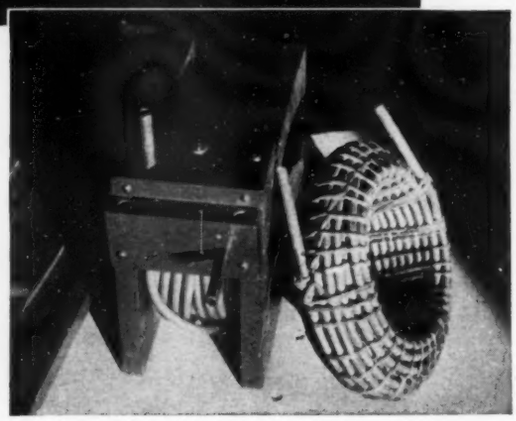




Some of the demonstration apparatus used to show the behaviour of gas in cable. Above: 1,000 feet of small cable, connected to manometers at 50-foot intervals, simulate a normal gas pressure section. Right: Such 50-foot sections of cable are interconnected to form the 1,000-foot section used in the demonstration.

Damaged TELEPHONE CABLES SEND Their Own Alarms

By LEON W. GERMAIN

(Courtesy BELL TELEPHONE MAGAZINE)

Nitrogen gas introduced under pressure protects service both by transmitting signals when a leak occurs and by excluding moisture until repairs can be made.

SPRING floods had disrupted service on two aerial long distance telephone cables crossing Pennsylvania by way of Shippensburg and Bedford. The two remaining cables, routed through Altoona and Lewistown, were taking a severe beating from the water and were already showing signs of trouble. It was not long after the first two cables had failed that alarm signals at Lewistown and Altoona indicated damage to one of the two remaining cables, and early the next morning another signal in the Altoona testroom heralded further trouble.

Promptly after the first alarm, repair men were dispatched from both Lewistown and Altoona; but with the roads flooded, both crews were soon stopped. It looked like the final stage of a complete service interruption on one of the most important Long-Lines toll routes.

Shortly after the second alarm came in, the Altoona testroom received a telephone call from a farmer near the scene of the trouble. He reported that the pole line near his farm had washed out, dropping the cables into the water. In fact, he had been out in a boat (most providentially available) and noticed bubbles coming up from one of the cables. He went on to say that he had often watched the section man putting gas into the cables, and as there were valves above water on each cable, he would be glad to attempt the job of gassing them if gas could be made available to him.

(The farmer alluded to the standard practice of keeping long distance telephone cables filled with nitrogen gas under pressure, so that if the cable sheath is punctured, the gas

WORKER ON LEFT IS testing the gas pressure in a reel of cable before it is loaded onto a cable laying train to be plowed into the ground. Low pressure would indicate a leak in the cable sheath. RIGHT PHOTO—"Flash testing." The sleeve covering the splice in this buried cable is being painted with soapsuds, which will bubble if gas can escape through leaks in the solder.

pressure prevents the entrance of moisture.)

This obliging and enterprising individual went on to say that there was a dry meadow on his farm where a small airplane might land with the necessary equipment.

Just about that time, two pairs in one of the cables failed—due, obviously, to moisture. It was plain that, with the loss of gas pressure, it would not be long before the cables were waterlogged.

Flying weather was not good, but the Altoona airport was dry, and a pilot offered to try to reach the farm in a small cabin plane. He figured he could carry one man and a cylinder of gas, or two cylinders of gas. After considerable discussion, it was decided that the second cylinder was more important, and from what the farmer had said, it would not be too much. So the chief testboard man wrote out some instructions which he gave to the pilot, with a prayer that he and the farmer could work it out between them. Then he went back to the testroom, to be met with the news that two more pairs had failed.

In the meantime, the farmer had marked off a landing strip. He signalled the pilot and the latter tried for a landing. On the second attempt he made it, and he and the farmer hauled the gas cylinders over to the cables and connected them to the valves.

Altogether, only eight pairs failed out of about 600 in those two cables. When the water receded a few days later, the sheaths of both cables were found to be punctured in several places.

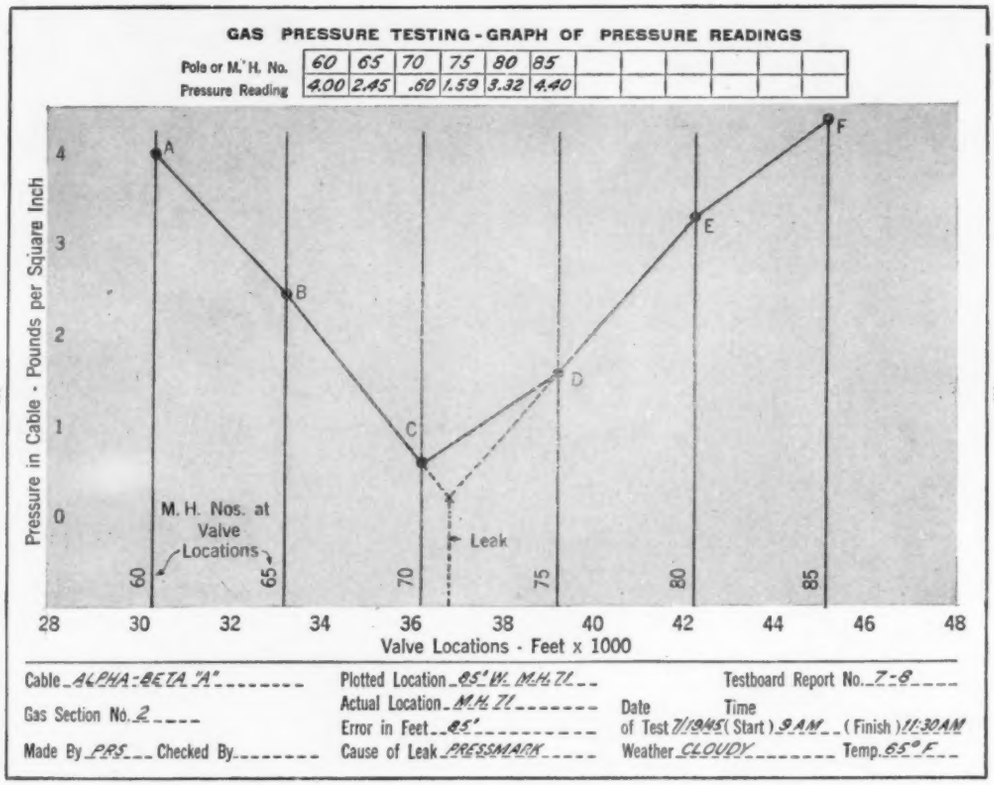
THE idea of keeping nitrogen gas under pressure in toll cables as a means of constant protection against moisture developed about 20 years ago out of the use of vapors of various kinds to test the tightness of cable sheaths. The results were so gratifying that all toll cables maintained by Long Lines are now kept permanently under gas pressure. Associated Companies have likewise adopted this protective device, and the greater part of their toll cables are kept filled with gas.

LEON W. GERMAIN, general plant manager A. T. & T. Co., Long Lines Department, has worked with cables during most of his telephone career—and that began in 1909.

Gas has done a remarkable job in reducing cable failures and maintaining the continuity of toll service. This was particularly important during the War, when every available facility was urgently required for the war effort. It is no less important now, when all toll facilities are so loaded that if serious troubles or failures should occur on any of the toll cables, there are almost no spare facilities available over which the services may be re-routed.

It is significant that in 1929, when the program for gassing cables was getting under way, there were 247 pair troubles a month per 1000 sheath miles of ungassed underground cable; while in 1945, with all underground cables under permanent gas pressure, this figure had dropped to 12 pair troubles a month per 1000 sheath miles. Similar figures for aerial cables show 91 pair troubles a month per 1000 sheath miles in 1929 against 29 in 1945.

It will be noted, in the figures given above, that the use of gas had a greater effect in improving the performance of underground cables than was the case with aerial cables. One


GAS PRESSURE TESTING - GRAPH OF PRESSURE READINGS
Pole or M. H. No. 60 65 70 75 80 85
Pressure Reading 4.00 2.45 .60 1.59 3.32 4.40
Pressure in Cable - Pounds per Square Inch
M. H. Nos. at Valve Locations
Leak
Valve Locations - Feet x 1000
Cable ALPHA-BETA "A"
Gas Section No. 2
Made By PRS Checked By
Plotted Location 85' W. M.H. 71
Actual Location M.H. 71
Error in Feet 85'
Cause of Leak PRESSMARK
Testboard Report No. 7-8
Date of Test 7/1/1945
Time (Start) 9 A.M. (Finish) 11:30 A.M.
Weather CLOUDY
Temp. 65° F.

A pressure graph, showing how readings at valves on either side of a low-pressure point may be charted to locate the point of cable sheath damage.

reason for this is that underground or buried cables frequently lie in moist ground or even under a head of water so that any small crack or hole developing in the sheath may, without the protection of gas pressure, immediately wet the entire cable. Another reason is that underground or buried cable, protected by Mother Earth, is not exposed to certain hazards resulting in damage to wires in aerial cables which gas pressure cannot prevent. Among these are fires near the aerial cable line, and bullets fired by unskilled or careless hunters.

Toll cables are charged with dry nitrogen gas at a pressure of seven pounds per square inch in aerial and ten pounds per square inch in underground and buried cables, figured at a temperature of 60° F. These pressures will, of course, be greater at higher temperatures and less at lower temperatures. The higher pressure used in underground and buried cables is to afford greater protection against moisture when a cable is submerged under water. For every two feet of water over the cable, one pound of pressure will successfully resist the entrance of moisture.

Gas-tight Cable Sections

CABLE under pressure is divided into gas-tight sections 10 miles or more in length. Every two or three miles an alarm "contactor" is installed. A contactor may be compared to a steam gauge, the needle of which will close a contact when the pressure in the cable is reduced to a predetermined value and thereby signal a nearby testroom. At about half-mile intervals along each cable, valves similar to ordinary tire valves are soldered into the cable. These permit the cablemen to determine the pressure at each of these points with considerable accuracy—and, if desired, to add gas at those points.

Let us assume now that a section of aerial cable is filled with gas up to pressure. A rifle bullet intended for a deer drills the cable. It is a soggy Fall day of wind and intermittent rain. If it were not for the gas escaping through the holes made by the bullet, water would soon begin to soak the paper insulation of the 600 wires inside that cable. But the gas pressure keeps the water out.

At the same time, the escaping gas naturally causes pressure in the immediate vicinity of the hole to fall; and when it has dropped three or four pounds at an adjacent contactor, a contact closes. The contactor, through a pair of wires in the cable itself, rings a bell in the testroom 30 miles up the pike. Although some gas has already been lost, it leaks slowly through even a relatively large hole, and the remaining reservoir of gas in the cable will keep out the moisture for a number of hours after a contactor has operated.

Since all of the contactors in a considerable stretch of cable are connected to a single pair of wires, there is no indication as to which particular contactor gave the alarm. However, by the use of a Wheatstone bridge, the man at the testboard can measure the resistance of the circuit completed by the contactor, which will immediately tell him which contactor it is.

Repair men are sent out to the vicinity of the contactor which operated. As these are at two- or three-mile intervals, the men might have quite a time locating a small bullet hole on an aerial cable, especially if it was dark by the time they got there. They have the tire valves, however, to help in the search. They note the pressures at valves on either side of the contactor and find that these pressures drop off and rise again. Obviously the break must be between the two valves with the lowest readings.

This is still not close enough, since the valves are half a mile apart. However, if the searchers plot on cross-section paper the pressures shown by a number of valves on either side of the low-pressure point, and then draw lines through them, thereby establishing the "pressure gradients," they will pin the location of the sheath break down with satisfactory accuracy.

(Please turn to page 52)

Snapped by TELEPHONE ENGINEER AND MANAGEMENT'S photographer at recent Minnesota convention were these prominent telephone men: LEFT PHOTO: JOE E. BYRNE, recording secretary of the Wisconsin State Telephone Association, Madison, and PETE FERGUSON, manager of the Mankato (Minn.) Citizens Telephone Co. RIGHT PHOTO: Kellogg's BILL KIMMEL; National Carbon's JOHN BURKE; ARTHUR A. RUDLOFF, Lake Crystal, Minn., and GLEN VOYLES of National Telephone & Supply.

MINNESOTA INDEPENDENTS Lay Plans To Follow Industry's "GO AHEAD" Policy

By

RAY W. SMITH

Editor, Telephone Engineer Publications

MEETING for its 38th annual convention at the Hotel St. Paul, St. Paul, on January 27, 28, 29, the Minnesota Telephone Association, under the able guidance of President Charles Cashel, Worthington, Vice-President Irving Todd, Hastings, and Secretary- Treasurer J. C. Crowley, Jr., St. Paul, started off the 1947 convention season with a meeting that for attendance, interest and general handling, seems destined to be one of the year's outstanding conventions.

Headlined by top industry speakers, each session attracted an audience that filled to overflowing the Hotel St. Paul's Casino Room. The great interest evidenced in each speaker's presentation of the industry's problems, proved that Minnesota Independents are on the "go-ahead" program of improved service and expansion.

An unusual but highly effective presentation was the appearance of three outstanding secretaries of Independent telephone associations: Joe E. Byrne, recording secretary of the Wisconsin State Telephone Association, Madison; A. J. McInnes, secretary, North Dakota Telephone Association, Fargo, and Wm. F. Miller, secretary, Iowa Independent Telephone Association, Des Moines. Each secretary devoted his address to the subject "What I Would Like The Telephone Companies of My State To Do." The recommendations of Mr. Byrnes, Mr. McInnes and Mr. Miller are included as a part of this convention report, and in the opinion of this writer they merit the close study of every telephone man.

Photographed in this group are (left to right): JACK CROWLEY, St. Paul; WM. ANGLE, chairman board of directors Stromberg-Carlson Co., Rochester, N. Y., S. A. RASK, Blooming Prairie, Minn., and SAM R. RYAN, manager Washington office of Gary Services & Investment Co.

Changes are Sure To Effect Industry

PRESIDENT Cashel called the convention to order on the afternoon of January 27 and headlined the program with his interesting address. In his opening remarks he stressed the true purpose of conventions by stating: *"Our purpose here each year is to attempt to gain a proper perspective for the operation of our business. We review the past and see where we have been; try to guess at the future to see where we are going, and set our course accordingly."*

"By the rules of nature," he said, "nothing is secure or static in this world.

Constant change is taking place in everything—either growth or deterioration. The rate of change is the only variable factor. The fact of change is inevitable. It occurs in trees and rocks, in people and nations, in politics and business. The telephone industry is no exception; there is no standing still."

Mr. Cashel stated that changes are happening at a faster clip than ever before in history.

"We must recognize," he said, "that some of them may have an effect upon our business or methods of operation. While there is no competition in the usual sense of the word from within our industry, there are constant possibilities of encroachment from without. We cannot afford to sit idly by and ignore these potentially competitive influences. Whenever our telephone system fails to meet the needs of our civilization for quick, two-way voice communication, we have become vulnerable to attack.

"We must constantly seek to anticipate these needs, and to adjust our service to them—to continue our efforts to make it faster, cheaper, and more universally available to everyone. Perhaps it is not too visionary to hope that our ultimate objective is to enable anyone, anywhere, to talk to anyone else, anywhere else, at any time. Mobile telephony is the first step to cut the roots which bind us to static locations. It is only in its infancy. Who is willing to predict its final limitations?"

Mr. Cashel said that for a farmer to be able to get into his car and drive to town faster than he can get through a call on a busy party line is not his idea of the kind of telephone service he wants and needs today. The farmer, he stated, is no longer dependent on his party line to bring him news and gossip as he was 30 years ago. His radio will give him the markets, news, entertainment and advertising far more quickly and thoroughly than his telephone ever did. His car will take him miles into town in less time than it took him to hitch up his team a few years ago. He is no longer the "rustic country bumkin". He has electricity, plumbing, all-weather roads, productive machinery, and he wants good telephone service.

"By good service," Mr. Cashel stated, "he means quicker, more dependable, 24-hour-per-day service, with a minimum of interference from others on the line. He should also have improved transmission, so that he can place and receive toll calls when necessary. He has suddenly discovered that toll is fast and economical in the conduct of his affairs. He is willing and able to pay the additional cost.

"The same things are happening in small towns and villages. City people used to regard them as backward, outlying communities. While they may still be small in population, they are no longer either backward nor remote. Radios, movies, automobiles and airplanes are fast removing those definitions. People, no matter where they live, are pretty much the same, and want the same things. The standard of living in small towns is fast catching up with that of cities, and they offer many advantages to living that city people cannot have. The trend to de-centralize manufacturing that is starting will make small communities increasingly important, and will create an added demand for good telephone service. It is up to the people that operate these exchanges to do their part in providing that service for their communities."

Commenting on the telephone industry's growth and its adapting itself to conditions of the changing world, Mr. Cashel said: "We have no need to fear the future if we will but co-operate with its requirements. But we must bear in mind that there exist two distinct branches within our industry—the Bell System, which operates about 80% of the telephones, and the Independent Companies, which serve about 80% of the geographical area of our country. The Bell Companies form a co-hesive organization. We Independents, as the name implies, are units Independent of the Bell System and of each other. We are certain to have differences of opinion about all subjects relating to our business. Let us resolve, in all our actions, to keep in mind the three common responsibilities upon which our service rests:

"First, responsibility to our subscribers, second, responsibility to our employees, and third, responsibility to our investors—And in good conscience to pursue our aim—the best possible service at the lowest cost commensurate with fair treatment of employees and reasonable earnings."

Minnesota Association Re-Elects Officers; G. M. Davis Elected to Board

At the business meeting January 28, G. M. Davis, Morgan, was elected to the board of directors to serve a three year term replacing Sam Rask. Mr. Rask has sold his interests in the Intercounty Telephone Co., Blooming Prairie, and is no longer connected with the industry.

Directors re-elected for three year terms are: C. M. Ostby, Erskine; Jas. Boyd, Alexandria; G. M. Dwelle, Lake City, and W. A. Eckles, Blue Earth.

Officers reelected are: President, Charles Cashel, Worthington; Vice-President, Irving Todd, Hastings, and Secretary-Treasurer J. C. Crowley, Jr., St. Paul.

Suggestions For Wisconsin Companies

POPULAR J. E. Byrne, recording secretary Wisconsin State Telephone Association, Madison, Wisconsin, was the second speaker of the first day session. Speaking on the subject—"What I Would Like The Telephone Companies of Wisconsin To Do," Mr. Byrne presented proposals, and stated the points were "offered as an expression of not only what I would *like* but what *I hope*, the telephone companies in my state will do."

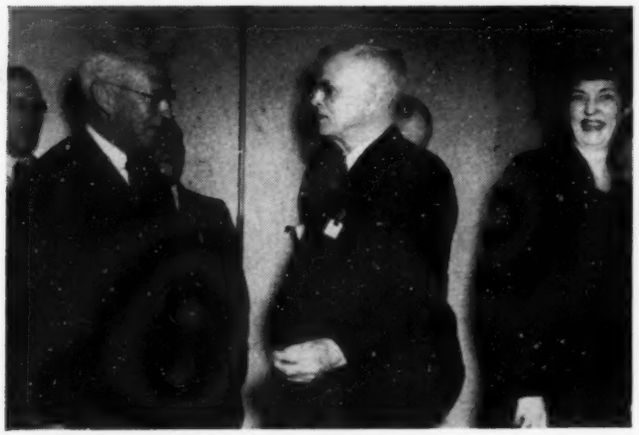
Mr. Byrne summarized his proposals by recommending that telephone companies in Wisconsin should:

(1) Metallicize all exchange aerial lines as soon as shortages of labor and materials permit and eliminate all grounded and common return lines within the next three years.

(2) Relieve overburdened rural lines by reducing and hereafter limiting the number of telephones to 8 or 10 subscribers per line, reduce the distracting number of rings the subscribers receive and see that all lines are properly balanced.

(3) Endeavor to keep all telephone

SAM R. RYAN, Washington manager of Gary Services & Investment Co., and JACK CROWLEY take time out to discuss convention activities.



Between sessions of Minnesota convention, (left to right): JOE BYRNES, Madison, Wis.; WM. ANGLE, Rochester, N.Y.; CHARLES, CASHEL, Worthington, S. A. RASK, Blooming Prairie; C. C. PEARCE, Riceville, Iowa, has the bald top showing, and MRS. WM. SALTMARSH, Annandale.

lines paralleling R.E.A., and other power lines where a grounded system is used, at least 30 feet apart, more if possible, and transpose the telephone circuits at about every 600 to 800 feet in order to reduce inductive interference to a minimum.

(4) Replace antiquated and worn out central office switchboards and unsightly museum pieces of station equipment in rural areas with improved modern types of equipment and apparatus.

(5) Keep all telephone equipment and outside plant in first class operating condition through *preventative* maintenance measures by routine periodic inspections and tests and prompt correction of any faulty conditions *before* the occurrence of service failures.

See that all frayed switchboard cords, worn plugs, thimbles and jacks are replaced and that dirty keys are properly cleaned.

Replace weak station batteries, bad telephone cords and faulty transmitters and substitute new types of station protectors for the old unfused carbon block protectors.

See that all drop wire line connections are either soldered or properly sleeved.

Keep trees and brush trimmed out along the lines and replace broken glass, loose brackets and pins.

Reset leaning poles and replace all rotted and broken poles and promptly restore service interrupted by lightning, sleet, wind storms, auto accidents, fires, etc.

(6) Establish and file with the Public Service Commission, maps showing the definite boundaries of the exchange area or territory in which the company holds itself out as ready to render service to the public.

(7) Adopt and establish, with Commission authority, a set of definite rules governing the extension of rural lines, setting forth how far the company,—to serve a prospective rural subscriber,—will extend its pole and wire lines at company expense and the basis on which the subscriber is to be charged for any additional line required to reach him.

(8) Set up with Commission authority, rules governing the rates to be paid for switching and the physical plant responsibilities of roadway companies and other owners of switchboard or service stations. "In fact," Mr. Byrnes stated, "I believe the switching companies should take over the roadway companies entirely and eliminate them from the picture."

(9) Do away with rate schedules that have been in effect for the last 10 or 20 years and immediately petition the Public Service Commission for increased rates more in keeping with present day conditions and costs;—Rates which will enable the company to compensate its officers and employees at present general wage levels in other industries, pay all operating expense, allow adequate provision for depreciation, the payment of taxes and in addition provide a reasonable return in the form of interest and dividends on the capital invested.

"The present state-wide, low subscriber rate structure throughout Wisconsin is extremely alarming," he said, "Hundreds of our companies must shortly receive relief through increased rates or shut up shop."

Quoting statistics taken from Bulletin No. 8, issued by the Public Service Commission of Wisconsin, Mr. Byrnes said that "Total operating revenues attained the peak of $34,374,801 in 1945 in increasing 7.3% over 1944. Class A Companies realized 92% of the total Telephone Operating Revenues. Class B utilities received 2.2% leaving 5.8% realized by the Class C&D Companies.

"Except for income taxes all classes of revenue deductions increased in 1945. Traffic expenditures which constitute approximately one-third of total deductions jumped 40.2% over the previous year. On a revenue basis, total deductions took 90.9c of every revenue dollar in 1945."

"The decline," said Mr. Byrnes, "in the operating income per station for the 10 year period shown is $2.77 or 27.7c per station per year and by dividing the latter figure into the $4.57 per station income for 1945 we find, that if the 10 year downward trend in net earnings continues at the same average annual rate, the entire telephone industry in Wisconsin in 16½ years will show *no* net operating income per station and will be out of business.

"This must not be allowed to happen and the only solution in these days of constantly mounting higher costs, rests in higher subscriber rates."

(10) Install a proper system of records and bookkeeping in accordance with the uniform system of accounts prescribed by the Public Service Commission for the various classes of telephone companies. Such a system need not be complicated, but it should start with time and material reports of work performed by the plant workmen and include records of exchange, toll and miscellaneous revenues, disbursements, payroll data necessary for social security and tax withholding records and should follow right through to a general ledger for use in preparing annual reports to investors, stockholders, regulatory and tax authorities.

"Too many companies," stated Mr. Byrnes, "center attention on the dwindling cash balance in the bank and utterly neglect the equally important process of properly recording the additions made during the year to their investment in telephone plant in service, with the result, that they never know what their true financial position is, and when the inevitable crash hits—it's too late."

(11) Join and support the State telephone association and use the opportunity it offers for counsel and advice in all branches of the telephone business.

Minnesota Banquet Committee Praised By Convention Group

The annual Minnesota Telephone Association banquet, entertainment and dance held Monday evening January 27 highlighted convention activities of the first day of the recent Minnesota convention.

Success of the evening's entertainment, was due to the successful efforts of the association's Dance and Floor Committee. This group under the Chairmanship of J. R. Dooley, who was assisted by L. H. Arvig, S. A. Brooks, Jay Houghtaling, W. C. Caldwell, A. L. Ericson and A. G. Krueger, went the limit in providing banquet and entertainment features that contributed much to the convention's success.

"An active State telephone association," he said, "is a blessing to the whole industry and I'd like to say a word or two on that score: The telephone business is not a peanut sized affair.—There are over 53 million 600 thousand telephones in the world—7 million 400 thousand more than there were just before the war and because, the telephone business is extremely complex in its relationship to the public as well as in the proper interpretation of the many complicated regulatory requirements of State and Federal authorities, it is essential that there be some central or semi-official body, composed of trustworthy company representatives of recognized ability and experience, which shall consider all matters affecting the telephone industry as a whole in a state or the nation and in the best interest of all, interpret and advise uniformally acceptable ways and means of solving the problems presented.

"Further—an association is necessary to provide a place where all companies, in confidence, may take their problems for advice and assistance. Its the secretary's job to help the companies. An association secretary either knows the answers to your questions, or can readily get them from the best authorities and he likes to impart information to a concientious association secretary. Unimparted information falls into the same category as a kiss—in that it isn't worth a 'hoot' until you share it with somebody."

Mr. Byrnes stated that the State Association is a *profitable investment* for the companies. Its value has been demonstrated by the few following incidents: —Working through the U.S.I.T.A., it (1) secured the exemption under the Federal Fair Labor Standards Act of all operators in central offices serving less than 500 stations, thereby effecting annual payroll savings to the companies of thousands of dollars, and (2) it assisted in working out new agreements with the Bell System whereby the Independent companies receive increased monthly toll compensation totaling thousands of dollars in added revenues.

"In Wisconsin," he stated, "as in Minnesota the Association assisted in passing legislation limiting to a two-year period instead of extending back to 1938, all backpay claims under the wage-hour law, with additional savings to many of our companies.

"In 1945 in Wisconsin we succeeded in having a bill withdrawn which proposed that all overhead telephone plant located within 200 feet of an existing or proposed airport be removed or placed underground at telephone company expense. When you realize that airports are usually located on or near main highways along which many interstate heavy toll leads are constructed—some idea of the immense cost and inconvenience to the companies involved which was avoided, becomes apparent."

Stromberg-Carlson's telephone sales manager, T. C. THOMPSON (center) looks on as visitors attend exhibit at Minnesota convention.

Mr. Byrnes closed his interesting address by stating: "These are but a few of the many instances, known to all of you, in which State Associations have paid the companies the equivalent of actual cash dividends exceeding, many times over, the annual cost of membership in the organization—Therefore, I reiterate, the State Association is a good investment and all telephone companies should be members.

"I trust no one will feel that this discussion is offered in criticism or as fault finding—no one knows or appreciates better than I, the hardships that were encountered and overcome by loyal telephone men and women during the war and postwar abnormal periods. Indeed, the foregoing has been prompted only by a spirit and desire on my part to be helpful to our companies toward establishing better and more advanced service. Let all of us be inspired to make every effort and take pride in continuing to render America, the world's best telephone communications."

Suggestions For North Dakota Companies

THE NEXT speaker, A. J. McInnes, secretary-treasurer of the North Dakota Telephone Association, Fargo, discussed "What I Would Like The Telephone Companies In North Dakota To Do."

"North Dakota," he said, "is strictly an agricultural state, with no dense centers of population, but many small towns, large farms, and wide open spaces in the western range. Fargo is our largest city, with a population of about 38,000. The state has a population of approximately 600,000, occupying a territory of some 70,655 square miles. The state has 69,524 farms averaging around 588 acres, a few farms as much as 10,000 acres, with the trend toward still larger units."

Mr. McInnes stated that there are 117 commercial telephone companies, including the Bell System, and 703 mutual and co-operative companies, operating 101,668 telephones in the state of North Dakota. Of this number the Bell has 58,036 telephones, the other 116 companies 30,891 and the 703 mutual and co-operative companies 12,741. The Bell company switches 8,810 of these stations and the Independents 3,821. Of the total number of telephones, 27, 942 are rural. The state phone development is one telephone for every 5.9 people.

"The rural situation presents a very different picture with 69,524 farms and 27,942 rural telephones," he stated, "This figures out to 40% development. . . The rate of installing has been accelerated the last year and it is my thought that were it possible to work all held orders, the rural situation would present a little better picture. Regardless of this, however, the most pressing problem facing the industry today is rural development.

"In my report to our convention last spring I suggested that the great number of our telephone companies were too small to be efficient operating units, and that it appeared to me that the answer was consolidating the small units into larger units. This isn't just a theory, or wishful thinking, with me because some consolidation has already taken place and is proving very successful, and more consolidations are planned."

Discussing service, Mr. McInnes stated, that it was every company's obligation to give good service, to see that service is available to every one who wants it and will pay for it.

"You may have some service stations," he said, "in your territory served by your exchanges; you may have no legal responsibility to see that these stations are kept in good servicable condition, but, to my mind, you have an obligation —even if a selfish one—to see that the service is good, in order to protect the service on your company owned stations."

Mr. McInnes said that, REA plans to electrify every farm, will probably

(Please turn to page 48)

Roland C. Davies
Editor
Telecommunications Reports

Our WASHINGTON BUREAU Reports

By
ROLAND C. DAVIES
and FRED HENCK

Radiotelephone

THE possibility that the growth and development of radiotelephone service—urban and highway mobile, toll, and rural—may be seriously hampered, and that adequate service may be delayed for some time, because of frequency shortages, has cropped up in two matters before the FCC.

Most recent was the hearing before the en banc Commission on its revised frequency service allocations in several bands, including 152-162 megacycles, where most common carrier operations are now based. Although the proceeding was an oral argument on the Commission's proposal to allocate the channels within the bands on a block system, and its channel separation and transition period plans, little opposition cropped up to the FCC's plans. What did occur was a general plea for badly-needed additional channels from telephone company representatives, both Independent and Bell System.

E. H. Bartelink, General Telephone System Radio Engineer, flatly told the Commissioners that General cannot provide satisfactory rural service unless it is allocated 40 additional working duplex channels for its operating areas. He argued that use of higher frequencies for toll radiotelephone operations might be feasible, but that microwave equipment is presently too expensive to use the upper portion of the spectrum to provide telephone service for farmers and others in rural areas.

Immediately before the hearings, the A. T. & T. filed a petition with the Commission asking that the 162-174 mc band, now being used for forestry and national park service, be alloted for common carrier operation in urban areas, where the government has little need for the channels. The Bell System petition also urged that the 152-162 mc space be repartitioned, on the basis of monitoring of the band in January which showed use of the space in three cities by many services not in proportion to the number of channels provided.

At the hearings, A. T. & T. Radio Coordinator F. M. Ryan amplified this view, stressing the success of urban mobile operations to date and the vast anticipated demand within two to five years, based on commercial department estimates. Mr. Ryan argued that in areas such as New York City the service cannot grow any more until more space is provided in which it can develop.

Equally important in the proceedings before the Commission was the statement of B. C. Burden, Special Consultant for the United States Independent Telephone Association, that the Commission consider the frequency economy which might be brought about by joint use of common carrier facilities by various industries, especially in communities where such users' traffic requirements would be relatively light.

Mr. Burden pointed out that the USITA recognizes "that there might be certain specialized radiotelephone system applications in which the large volume or the special nature of the traffic to be handled would warrant a privately-owned system having no connection to the regular telephone system," but he brought out that the Independents believe "that economy in the use of radio channels can be accomplished where the radiotelephone service needs of a community are furnished on a common carrier basis, and assuming that several duplicate systems would otherwise be involved."

◆

Excise Taxes

DEVELOPMENTS in the excise tax picture in recent weeks definitely indicate that a large segment of Congress is definitely aware of the injustice to users of communications service contained in the present excise tax picture. The possibility that reductions of the amounts paid by subscribers to the government for use of the telephone will be approved by the legislators is good, but it hinges entirely on the overall tax-fiscal structure, the amount of the national budget eventually determined, and the slashes made in other taxes, particularly individual income levies.

In floor debate on the Grant Bill, to extend indefinitely the special wartime excise rates which otherwise would pass out of the picture July 1 and afford some small relief to telephone subscribers, and in hearings before the House Rules Committee on the measure a week ago, it was obvious that a number of Congressmen are thinking along the line that communications service cannot be classed as a luxury. Thus it appears that if selective reductions of excise rates are taken up, telephone service will get a break on the presently stiff imposts.

Meanwhile, the Grant Bill is before the Senate Finance Committee, but it cannot be considered as anything more than a portion of the GOP strategy to obtain a cut in income taxes, and a stopgap for furriers, etc., who faced severe losses of business if the public had been assured that the excises would disappear July 1 under President Truman's proclamation.

◆

Communications Act

WHATEVER the protestations of moves to investigate the FCC, replace it with another agency through a "ripper" bill, or rewrite the Communications Act of 1934 to define rigidly the Commission's powers and regulatory responsibilities, it does not appear at this time that common carrier operations will be much affected.

Senator Wallace White (R. Me.) Senate majority leader and Chairman of the Interstate and Foreign Com-

merce Committee, told TELEPHONE ENGINEER AND MANAGEMENT that while he is contemplating the introduction of a bill to recognize the Commission, it is "not imminent" and the pressure of his twin jobs has kept him from even serious thinking on the subject. He emphasized throughout the need for "radio" legislation, leading to the belief that his measure, when it does come, will be directed primarily at the broadcast operations of the FCC.

Meanwhile, on the House side, any sentiment for the rumored "ripper" bill to eliminate the present structure of the FCC and replace it with another commission appears to have simmered to almost nothing. Such a possibility has, in any event, been taken seriously only by some elements of the broadcasting trade press, and the fact that President Truman would still have the authority to appoint the members of the new body, if one were to be created, would mitigate strongly against passage of such legislation. The possibility of a House investigation of the FCC, through a select committee or the Expenditures in Executive Departments group, still remains, but again it undoubtedly would be confined mainly to broadcast question.

The only measure introduced thus far bearing on the FCC is one recommended by the U. S. judicial conference to spell out handling of appeals from Commission decisions in the District Courts. Rep. Michener (R. Mich.), who offered the bill as Chairman of the Judiciary Committee, told TELEPHONE ENGINEER AND MANAGEMENT that the bill is designed to extend the scope of the Administrative Procedures Act, passed by the last Congress. He added that it will be some time before his committee can consider it, due to the pressure of portal pay, war powers, and other priority legislation.

◆

NFTW

THE program of the National Federation of Telephone Workers for nation-wide bargaining with the Bell System, which will have considerable effect on the Independent industry labor situation through the possible establishment of wage and working condition patterns, has reached the stage of awaiting negotiations with the A. T. & T. affiliates. The NFTW's top groups, the policy and bargaining committees and the executive board, have wound up meetings in Washington to gear the union's bargaining machinery, although no statement had been issued as this column was written except criticism of the Bell System for not having replied to the demands.

At the moment, it appears that the union's hand in the negotiations may have been weakened by the recent developments in the nation-wide labor picture, particularly the at least temporary accords reached in the steel and construction industries. If there are no large-scale strikes between now and the April 7 telephone deadline, it is likely that the NFTW—always reluctant to cause a telephone service stoppage—may be less disposed than ever to order a walkout.

◆

"The City Water Commissioner called and said if we don't install a phone in his house, he's going to shut the water off in your's!"

OPA

THE intervention in the rate proceeding of the Chesapeake & Potomac Telephone Co. of Baltimore City before the Maryland Public Utilities Commission of a "new OPA," the Treasury Department's Bureau of Federal Supply, failed to produce the anticipated heated contest, and the Federal agency did not appear to make much a case for itself in the proceeding. The Bureau is the former Treasury Procurement section, under a new name, and its launching of intervention moves in intrastate case as a representative of Government telephone users was thought in some quarters to presage activities similar to that of the late Public Utilities Division of the OPA.

The Bureau's summation of its position in the Maryland case, however, produced only a request to the regulatory agency that the increase "be kept to the lowest possible reasonable level."

◆

Ingles to Retire

ALTHOUGH no announcement had been made as TELEPHONE ENGINEER AND MANAGEMENT went to press, it appeared likely that Brig. Gen. Frank E. Stoner, Assistant Chief Signal Officer and wartime chief of the Army Communications Service, will be named on an acting basis to succeed Maj. Gen. Harry C. Ingles, Chief Signal Officer for the past four years, who is retiring March 31.

General Ingles, who gave the Signal Corps outstanding leadership during the war from mid-1943 to victory, told TELEPHONE ENGINEER AND MANAGEMENT his personal plans call mainly for "a couple of months of loafing." It has been speculated, however, that he might enter the Independent telephone field. He was born and spent his youth at Pleasantville, Nebr., and life in a smaller city or town in the midwest is known to appeal to him. Thus, he could take over the presidency of a substantial Independent telephone company and fulfill such a desire.

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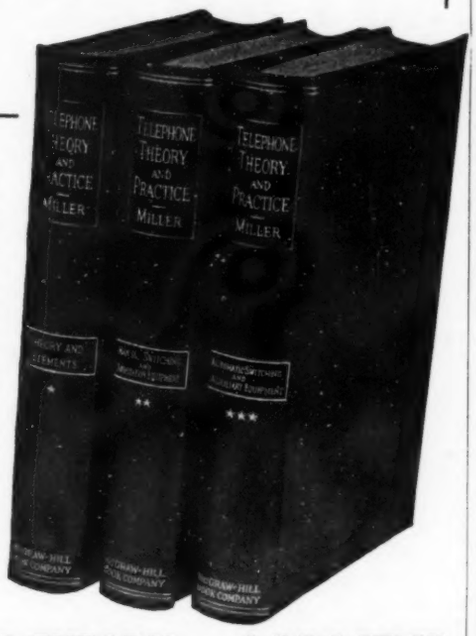

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Current COURT and COMMISSION Activities

New Rates Approved For Doyon, N. D.

The North Dakota Public Service Commission has approved application of J. J. Ellams, owner of the Doyon (N. D.) Telephone System for authority to make certain increases in telephone rates.

The commission order stated that the Doyon system is giving good telephone service to about 35 subscribers in the Doyon-Southam area and has made arrangements for extending service to about 90 other subscribers as soon as materials are available, and that the proposed rate increases were necessary if the company is to extend the service as planned.

The rates approved by the commission are:

DOYON	Present	Approved
Town Business	$3.25	$3.25
Town Residence	1.75	2.00
Rural Rate	1.75	2.25
SOUTHAM		
Town Business	$3.00	$3.00

Boost Rural Rate On Switched Lines

The Shimmin Telephone System, Forbes, North Dakota, has received commission authority to increase rural rates on its lines switched at Ashley, through the exchange of the Northwestern Bell Telephone Company.

G. R. Shimmin, owner of the system, testified that for many years he has owned and operated the telephone system at Forbes and Ashley. Formerly the lines extended from Forbes to the Ashley territory. Later, since all subscribers on the west end of the lines desired Ashley service, the line was cut, leaving 26 subscribers on the Ashley portion. About seven miles now separates the two parts of the system. The Ashley portion consists of 30 miles of poles with 35 miles of all wire grounded circuits, furnishing service to 26 subscribers. There are about 150 subscribers on the Forbes lines.

The Ashley lines are switched through the automatic exchange of the Northwestern Bell Telephone Company, at Ashley, and have 24-hour switching service. Mr. Shimmin maintains the Ashley lines; pays the Bell company rent for the automatic telephones at the rate of 15c per telephone per month, and does everything necessary in the operation of the lines, except the switching.

The present and approved rates are shown below:

	Present	Approved
Business phones....	$2.25	$2.25
Rural & Residence..	1.50	2.00

Net—No Discount

(The above rates, rural and residence, are 25c per month less than the rates of the Northwestern Bell Company.)

WHAT THEY'RE SAYING...

Editor,
Morris (Minn.) Sun

"This is the concern of every adult and child in this community and everywhere this need is apparent. Let's start with the rate increase and let's start now.

"When there is a service as vital as telephone that really wants to get going in this post-war stagnation of most production, people better give it a boost over the hump."

•

William F. Miller
Secretary-Treasurer
Iowa Independent Telephone Assn.

"What your secretary is leading up to is this. Take a good look at your present rates. Are they adequate? Does your revenue enable you to do the things you want to do? The rate bandwagon is coming down main street. It is practically right in front of you. Now is the time to climb on the bandwagon. A little later may be too late.

"Can your company survive under existing rates? Five years from now will your service be better or worse than it is now? Is your service satisfactory? Is it good? Is it poor? What are your plans to make it better?"

Rate Boost to Aid Company's Improvement Program

The North Dakota Public Service Commission has approved application of the Lone Star Rural Telephone Cooperative Association of Glenburn for authority to increase rates.

E. E. Brace, secretary-treasurer of the company, testified that the company is a mutual, non-profit, co-operative association organized in 1912. He stated there has been very little construction in the past 10 years. The company owns and operates 150 miles of pole line, 220 miles of wire, all grounded circuit except five miles. The lines are generally in poor condition. The company owns one exchange, at Glenburn, but serves the Village of Wolseth, about seven miles south east, over a rural line. It has 15 rural lines, and serves a total of 202 subscribers—about 16 business subscribers in Glenburn, the balance town residence and rural subscribers. Twenty-four hour service

is given. Free service is maintained between the Glenburn exchange and exchanges at Lansford and Upham, owned by other companies.

Mr. Brace stated that it is practically certain that there will be much R.E.A. construction in the near future in the territory served by the company, which will necessitate the metallization of much, if not all, of its lines.

He said that due to "the rather poor condition of the lines, and the expected R.E.A. construction in the territory, together with the greatly increased operating costs, it was decided by the Board of Directors to ask authority to increase all rates, the present rates not providing sufficient revenue to maintain the lines and take care of metallization."

The present and proposed rates are as follows:

	Present	Proposed
Town Business	$2.50	$3.00
Residence and Rural	1.50	2.00

The present 10% discount for yearly payment in advance would be continued under the proposed rates.

◆

Minnesota Telephone Company Purchases Two Companies

In two recent orders the Minnesota Railroad and Warehouse Commission authorized the Minnesota Telephone Company, Minneapolis, to purchase properties of the Dodge Center (Minn.) Telephone Company and the Zumbro Valley Telephone Company, Byron.

The properties will be operated under the name of the Minnesota Telephone Company.

◆

Commission Approves Rate Boost for Lonsdale, Minn.

The Lonsdale (Minn.) Telephone Company has received approval of its application for authority to change its schedule of telephone rates and charges upon certification to the Commission that the equipment for common battery service has been installed.

The Lonsdale company serves approximately 85 local and 170 rural stations from its Lonsdale exchange. After conversion to common battery service the original cost of the property will be approximately $25,477.

The commission found that rates now in force will be unreasonable upon conversion to automatic operation and will not produce a fair return upon the fair value of the property. Evidence produced at the hearing also proved that the Lonsdale company has metallicized and rehabilitated all rural lines, and is installing modern instruments at all rural stations as fast as equipment becomes available.

Present gross monthly rates and the rates to become effective following conversion to common battery service are:

Class of Service	Present Gross Rates	Approved Gross Rates
Individual Line Business	$3.00 (a)	$3.75 (c)
Individual Line Residence	1.75 (a)	2.50 (c)
Four-party Line Residence	1.50 (a)	2.00 (c)
Rural Multi-party Metallic	2.00 (b)	2.00 (d)
Extension Stations—Business	.75 Net	1.00 Net

(a) A discount of 25 cents per month is to be allowed on local gross rates if paid on or before the 20th of the month.

(b) A discount of 50 cents to be allowed on gross rural rates if paid on or before the 20th of the month.

(c) Local rates to be billed monthly in advance with a discount of 25 cents per month to be allowed if paid on or before the 25th day of the month in which service is rendered.

(d) Rural Rates to be billed quarterly in advance with a discount of 75 cents if paid on or before the 25th day of the first month of the quarter, 50 cents if paid on or before the 25th day of the second month of the quarter, and 25 cents if paid on or before the 25th day of the third month of the quarter for which service is billed.

Temporary disconnections at one-half regular rate for any class of service.

◆

Rate Boost For Oneonta, Ala.

R. C. Corr, owner of the Oneonta (Ala.) Telephone Company, has received authority from the Alabama Public Service Commission to revise exchange tariff for service at Oneonta.

Mr. Corr stated that due to the Wage-Hour Law, if he adds additional stations his operator salary expense will be increased, and that it is also necessary for him to increase salaries of his other employees; the total of such increases being about $2300 annually.

REA Approves Loans of $3,267,000 in Eight States

THE Department of Agriculture has announced that the Rural Electrification Administration had approved loans totaling $3,267,000 to eight borrowers in eight states. The funds will be used to finance rural electric facilities including 2,429 miles of rural distribution lines to serve 6,259 farms and other rural establishments. Construction will proceed as rapidly as materials become available.

Following are the cooperatives receiving loans, the amount of the loan in each case and the purpose for which it was approved:

Middle Georgia Electric Membership Corporation, Vienna, Ga., $975,000 for 623 miles of line to serve 2,487 rural consumers.

Lyon Rural Electric Cooperative, Rock Rapids, Iowa, $175,000 for system improvements and for 84 miles of line to serve 171 rural consumers.

Nodak Rural Electric Cooperative, Inc., Grand Forks, N. D., $800,000 for 572 miles of line to serve 625 rural consumers.

Licking Rural Electrification, Inc., Utica, Ohio, $210,000 for 143 miles of line to serve 532 rural consumers.

Cookson Hills Electric Cooperative, Inc., Stigler, Okla., $297,000 to complete previously approved construction and for 187 miles of line to serve 481 rural consumers.

Codington-Clark Electric Association, Inc., Watertown, S. D., $125,000 to complete previously approved construction and for 45 additional miles of line to serve 135 rural consumers.

Meriwether Lewis Electric Cooperative, Centerville, Tenn., $620,00 for system improvements and for 425 miles of line to serve 1,183 rural consumers.

Bandera Electric Cooperative, Inc., Bandera, Tex., $65,000 (together with $385,000 released from a previous allocation) to finance the construction of 350 miles of new line to serve 646 rural consumers.

A long step ahead
in STEPPING SWITCHES

AUTOMATIC ELECTRIC'S Type 45 Rotary Switch

From the same laboratories which in 1915 originated the rotary switch comes another "first"—a revolutionary new switch, with features that mark a tremendous advance in this field. Our design engineers have made it a simpler switch, by eliminating many of the adjustments required on other types. Our production engineers have made it a tougher switch, by super-accurate machining, and special treatment during production. Together, they have produced a rotary switch that provides longer life, more reliable operation, and lower maintenance costs than you've ever experienced before.

The Type 45 Rotary Switch carries ten wipers at 70-steps-a-second speed, self-interrupted (or 35 steps a second, externally interrupted), on 46 volts, d.c. Coils are available for voltages from 12 volts up—and always self-protecting. Up to fifteen 25-point bank levels can be provided, and single-ended wipers can be supplied, to give 50-point operation. "Off-normal" springs can be equipped—in "break," "make," or "break-make" combinations—for control of auxiliary circuits as desired. Simply select the characteristics you need, and get them all in this one switch.

Watch for new applications of the Type 45 Rotary Switch. It's an outstanding example of the constant improvement which keeps Automatic Electric equipment always ahead in the field of automatic switching.

AUTOMATIC ELECTRIC

Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems
Makers of Telephone, Signaling and Communication Apparatus . . . Electrical Engineers, Designers and Consultants

Distributors in U. S. and Possessions

AUTOMATIC ELECTRIC SALES CORPORATION, 1033 W. Van Buren St., Chicago 7, U. S. A.
Export Distributors: INTERNATIONAL AUTOMATIC ELECTRIC CORPORATION

SMOOTH OPERATION

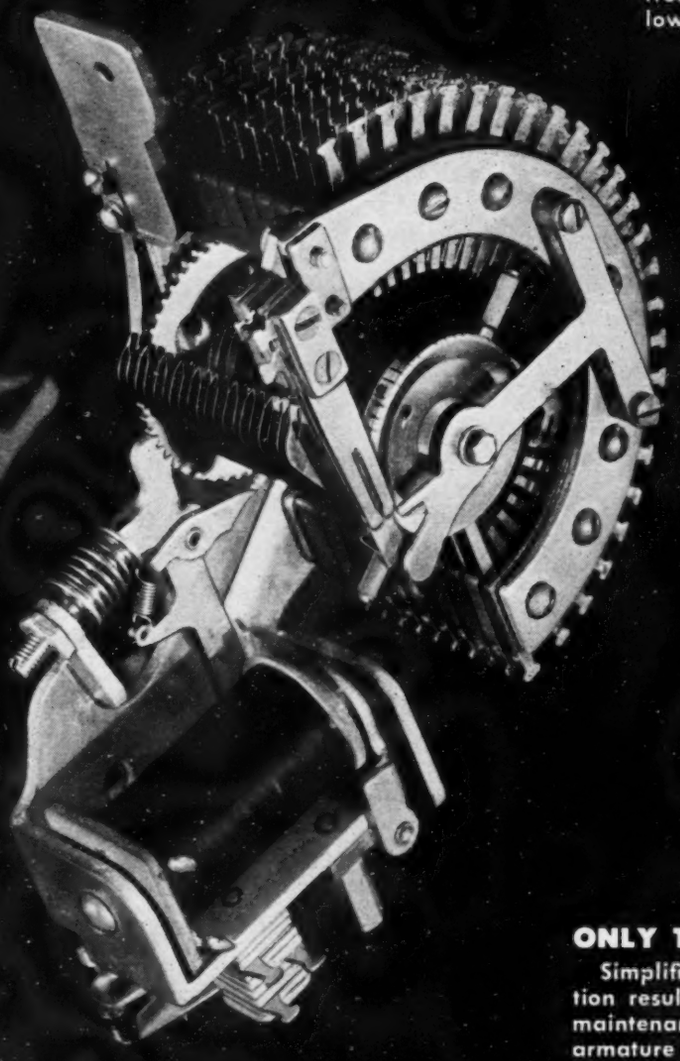
The brush springs occupy a position on the switch bank, and pass over them exactly as over contacts. Thus, there is no acceleration at any point in the operating cycle "galloping" effect to limit operation

MORE BANK LEVELS

Most commonly used as a ten-level switch, the Type 45 has frame, bank assembly, and wiper assembly so designed that up to 15 levels can be provided without altering the basic construction of the switch.

70-STEPS-A-SECOND SPEED!

The Type 45 Rotary Switch, carrying ten levels, operates self-interrupted at 70 to 75 steps per second, on 46 volts, d.c. Pulsed from an external source, it will easily follow up to 35 pulses per second.



GREATER RUGGEDNESS

A special heat treatment puts a tough, abrasion-resisting "case" on the ratchet wheel, and on the stopping teeth on the armature. The driving pawl, too, is made of high-impact abrasion-resisting steel.

MAXIMUM RELIABILITY

Type 45 switches in laboratory tests have run for more than 10,000,000 half-revolutions of the wipers, *at 70 steps per second* —and then, with only slight readjustments and replacement of minor parts, were ready for more!

NEW SIMPLICITY

The Type 45 Rotary Switch has no pawl stop and no armature stop—both are replaced by a set of "stopping teeth" on the end of the armature, that engage the ratchet teeth and prevent "overthrow" of the wiper assembly. Thus, the most difficult adjustments of the conventional rotary switch are completely eliminated.

ONLY THREE ADJUSTMENTS

Simplified design and accurate construction result in a switch having only three maintenance adjustments—for setting the armature airline, for gauging and tensioning the interrupter springs, and for tensioning the driving spring (a simple screw-adjustment).

AMPLE INSULATION

Bank and wiper assemblies are heat- and pressure-treated, providing a voltage breakdown between contacts or wipers, and between them and ground, of 2000 volts, ac—R.M.S. For maximum insulation, the brush springs (which complete connection to the wipers) are placed between the two wipers of each pair—not between the pairs.

OPERATION

...prings occupy a separate po-...switch bank, and the wipers ...m exactly as over the bank ... there is no added load at ...he operating cycle, and no ...fect to limit operating speeds.

Washington Commission Revises Rate Making Valuation Methods

A SATISFACTORY settlement of the lengthy controversy over rate-making valuation methods of the Pacific Telephone & Telegraph Company's plant in the state of Washington, which paves the way for increased intrastate telephone rates, was achieved with the recent issuance of revised orders by the Washington State Department of Public Utilities, to conform with 1943 findings of the State Supreme Court which overruled the 1940 valuation and rate reduction orders of the department.

Under the supplemental orders, the Washington state commission fixed the original cost of the Pacific company's plant and properties in that state at $96,531,689 and the depreciation reserve at $38,505,286, which was $13 million more than the 1940 order of $25,477,500. The Washington Department also established a rate base determination method of taking the original cost with the addition of working capital and then deducting the depreciation reserve.

The original application of the Pacific Telephone and Telegraph Co., which back in 1939 had recorded an unsatisfactory financial showing of the operations in the state of Washington, is thus through the supreme court's decision and the supplemental revised orders of the regulatory agency still remaining in the Washington Department's docket. But due to the company's greatly increased operating costs and wages and intensified unsatisfactory earnings condition, the rate increase to be formulated at present will be undoubtedly revised upwards. However, in its current supplemental orders, the Washington Department is felt to have achieved the lowest rate base possible.

Pension Fund Costs Included As Operating Expense

TWO significant findings were rendered by the Washington Department in the trio of supplemental orders, which became effective January 10, that "the portion of the costs incurred by the company in maintaining its **pension fund** assignable to intrastate operations should be included as an operating expense, as well as the **reasonable costs of license contract services**", although in regard to the latter it was pointed out findings of current studies were as yet incomplete.

In conformity with the 1943 State Supreme Court's decision, the department also made the important pronouncement that **"a rate of return of five per cent is not confiscatory"** and that it had no facts at present to permit it to modify such a determination although it reserved the right for a review and to adjust such determination in the light of economic and other conditions.

The department in its postwar investigation and conferences with the Pacific Company and Independents with toll facilities likewise made a notable step of progress in the adoption of the station-to-station basis of rate- making. (It will be recalled that during December the Washington Department had authorized 37 Independents to increase rates in its state.)

The settlement, which was reported to have been satisfactory to both the company and the regulatory agency, was achieved after numerous conferences and informal discussions during the past two years. It evolved a fulfillment of the directives of the State Supreme Court's decision of October 20, 1943, which had invalidated the department's valuation, depreciation and other findings of three years previously. In its 1940 order, based on a lengthy investigation of the telephone rates and operations, the Washington Department had directed a reduction of $1,053,533 in local exchange rates and $272,563 in intrastate toll rates. The investigation had been launched after the Pacific company had applied for an increase in intrastate rates. During the war the Pacific company made no move to have the findings of the state supreme court put into effect and only commenced conferences with the regulatory agency's staff on both the court's findings and the rate increase step in 1945 and 1946.

Approve Items of Plant Under Construction

THE Washington Department in the recent supplemental orders, made effective Jan. 10, approved the original cost of the Pacific company's plant and properties in that state at $95,360,851, together with the additional items of $614,107 for telephone plant under construction and $556,730 for property held for future telephone use as of January 1, 1946. The Department stated that the Pacific Telephone & Telegraph Company had been keeping its plant accounts in strict

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longer spans, better conductivity, and lower maintenance with

copperweld!

Pliable, easily handled, light in weight, economical in cost —only Copperweld combines the high strength and ruggedness of steel with the conductivity and permanence of copper.

Copperweld has the best electrical conductance of any high-strength conductor—is 2 to 3 times stronger than hard-drawn copper wire—has greater tensile strength than any wire of comparable properties.

Its permanent protection against rust means lower maintenance costs, plus good transmission for voice and carrier frequencies during the life of the installation.

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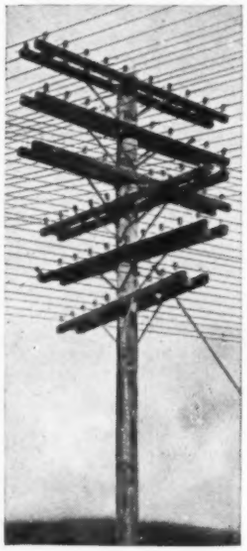

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"dependable" cross-arms

. . . all that the name implies

Cross-Arms made of a uniform grade and expert workmanship by American Cross-Arm, Inc., are available in three types of wood to meet your individual preference:

- Douglas Fir
- Creosoted Yellow Pine
- Gulf-Red Cypress

"Dependable" Cross-Arms are sturdy, well-seasoned, and available now for prompt shipment anywhere in the U. S. A.

armstrong's whitall tatum insulators *are harder to see . . . harder to break!*

No. 1 "DP" "Double Petticoat" insulator thread construction makes pin fit snugly.

Crystal-clear Whitall-Tatum Glass nsulators, product of Armstrong Cork Company, reduce malicious breakage to a minimum. Melting into the sky background, they offer hard pickings for amateur sharpshooters.

For more than 24 years, these Insulators have stood ruggedly against every kind of assault. Extremes of cold and heat leave them untouched. Even direct transverse strains prove them stronger than their supporting pins.

Back of their precision-engineered, automatic manufacture stand years of laboratory research. Because of this uncompromising devotion to quality, Armstrong's Whitall Tatum Insulators are today specified by leading communication systems of America.

CONFORM TO—OR EXCEED—ASTM STANDARDS

individual station protector

reliable 955A

MFD. BY RELIABLE ELECTRIC COMPANY

- One-piece Design
- Simplified Mounting
- Asbestos Mats Eliminated

The very simplicity of the Reliable 955A is assurance of long, trouble-free service. Fuses are mounted on a one-piece, low absorption porcelain well spaced for convenient connecting. Reliable Self-cleaning Sawtooth Discharge Blocks are standard, dissipating static without time lag or danger of grounding the line. The 955A uses No. 77 seven ampere fuses —other fuse capacities can be furnished.

"Reliable Identifies the Quality"

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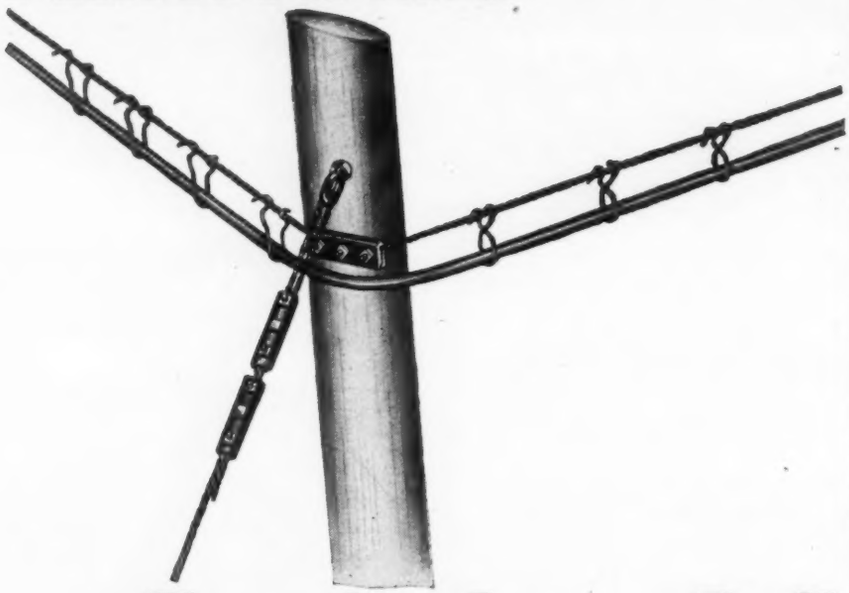
STROMBERG Telephone CARLSON

Amerstrand—



For the Long Pull

When you've used Amerstrand for your messages and guys, your plant is built "once and for all". Telephone men who regularly use this strand are agreed that it offers all the qualities demanded for sound engineering and lasting construction.

Rigidly controlled production, from iron ore to finished product, assures exactly the correct combination of characteristics for each specific purpose. And Amerstrand is made in a wide range of grades and sizes, from which you can select the proper strand for any job—no more hit'n miss ordering of strands too light or too heavy to do the job. Thus, it permits rigid control of initial and replacement costs for any installation.

So when messages and guys are being installed or replaced, remember to specify . . . AMERSTRAND . . . the best for the long pull!

USS Amertel TELEPHONE AND TELEGRAPH WIRE — AMERICAN STEEL & WIRE COMPANY

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conformity with the Uniform System of Accounts.

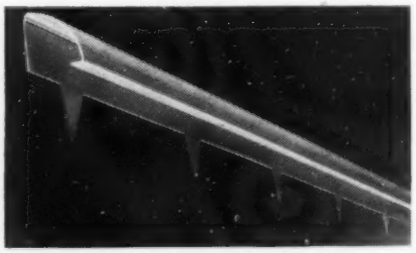
The approved Depreciation Reserve of $38,505,285, effective as of January 1, 1946, the Washington Department noted in its supplemental order, was approved under the results of the joint conferences of the California, Idaho, Oregon and Washington regulatory agencies which has fixed the total depreciation reserve of $144,330,161 for the Pacific company. These had been divided—$86,456,065 for Northern California, $593,002 for Northwestern Idaho, and $18,775,806 for Oregon. The Pacific company agreed to establish accounting procedures to maintain separate depreciation reserves for each of the four states under the Bell System's plan covering all states. The Washington Department stated that it did not pass on the adequacy of the reserve or the service lines and salvage estimates for future depreciation rates.

In the current supplemental orders, the Washington Department revoked five of the 11 sections of its original 1940 order in accordance with the state supreme court's ruling, and deferred a final determination of three other sections pending completion of its investigation. These latter three sections deal respectively with the fixing of a depreciation charge at not more than 3.55% per year; passing onto subscribers of municipal occupational taxes; and the idea of setting up a reserve fund out of any excess earned above a 5% return. The station-to-station section of the order has already been effectuated.

◆

National Electric Announces New Telephone Wire Raceway

Lopo-Trim, a steel quarter round designed as a baseboard trim, a low potential wiring raceway, or as a quarter-round trim above or beneath



Lopo Trim approved as telephone wire raceway.

installations of the company's Plug-In Strip, has been announced by National Electric Corp., Chamber of Commerce Bldg., Pittsburgh.

Available in 6 ft. lengths, the ¾ in. by ¾ in. Lopo-Trim is installed without the use of nails, screws or fasteners.

Projecting down from the back of the quarter round at 3 in. intervals are integral steel prongs. When the Lopo-Trim is installed, these prongs are pushed down behind the baseboard or the Plug-In Strip. Their design and positioning exert a tension that holds the quarter round snugly in place. For rounding external or internal corners, 8 in. by 8 in. two-piece matching elbows are available.

The Lopo-Trim has been approved as telephone wire raceway. It can also be used as a raceway for such other low potential services as buzzer and inter-communication wiring.

This quarter round steel raceway, being particularly adaptable for residential, store and office applications, has a neutral satin grey finish. Such a coloring harmonizes with all tones used in interior decoration, or the Lopo-Trim may be painted to match baseboard, floor or walls.

◆

AIEE Winter Convention Held in New York City

The American Institute of Electrical Engineers met in the annual winter convention at Institute headquarters, 33 West 39th Street in New York City the week of January 27, 1947. In an excellent program of electrical engineering activities the Communications Committee of the Institute, J. J. Pilliod, Chairman, gave particular attention to matters of current interest to the telephone industry. A subcommittee on "Testing of Telephone Transmitters and Receivers" was created. The Chairman of this subcommittee is Dr. Arthur Bessey Smith, vice president of Automatic Electric Laboratories, Inc., supported by R. G. McCurdy, Bell Telephone Laboratories, Inc., Louis G. Pacent, Pacent Engineering Corporation, and Frederick C. Young, vice president, Stromberg-Carlson Company.

At the session of this subcommittee on Thursday, January 30, 1947, the several topics on its program were presented by:

Dr. Leo L. Beranek, Cruft Laboratory
Raoul A. Faralla, U. S. Signal Corps
P. M. Barzilaski, Brooklyn Navy Yard
W. L. Tuffnell, Bell Telephone Laboratories, Inc.
George H. Brodie, Kellogg Switchboard and Supply Company.
W. A. Codd, Stromberg-Carlson Company
Harry A. Pearson, Sonotone Corp.
L. C. Pocock, Standard Telephones and Cables, London, England
H. C. Pye, Automatic Electric Company.

Two IMPORTANT O.K.'s for this BETTER pole treatment

After years of thoroughgoing test, the facts are proving that Chapman "Penta" Preservative is, on all counts, the most satisfactory treatment for your poles which is available today.

Linemen and others who must work on and with poles prefer this clean treating material, because there's nothing sticky or unpleasant about Chapman "Penta" Preservative.

Actual tests by the Forest Service of the U. S. Department of Agriculture show pentachlorphenol superior in decay and termite resistance to any of the 21 other preservatives—including creosote—used in their 10-year-old exposure experiments. That means lower maintenance costs for you.

Chapman "Penta" Preservative treatment costs no more than creosote, and can be obtained in any part of the United States. Write us for details.

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Chapman "Penta" Preservative contains *Pentachlorphenol*
a product of
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Around The Utilities World
with
SIMPLEX
JACKS
SAFER
STRONGER
FASTER
Your Guide to Real Manpower Savings
Send for new Bulletin U-46, which presents Simplex Jacks for every need of electric and telephone companies; including Reel Jacks, Pole Pulling and Straightening Jacks, Wire Tensioning Jacks and other man-hour saving cost-cutting jacks with full specifications and list prices.
Simplex
LEVER SCREW - HYDRAULIC
Jacks
Templeton, Kenly & Co.
Chicago (44), Illinois
Better, Safer Jacks Since 1899

Automatic Gets Rights To Finch Facsimile

Announcement has been made by W. J. Caverley, president of Automatic Electric Company, of the completion of an agreement with Finch Telecommunications, Inc., Passaic, N. J., whereby the Automatic company has acquired rights under Finch patents to manufacture, and sell or lease, Finch Facsimile equipment.

Finch Facsimile is the name applied to the apparatus and methods perfected by Capt. W. G. H. Finch, USNR, president of the Finch organization, to provide high speed transmission of writing, pictures or printed material between any two points which are connected by a wire circuit such as a telephone line, or by a radio channel. Developed during the years just prior to the war, the equipment has been widely employed in various types of commercial applications, and has proved to be a fast, accurate and economical means of transmitting all varieties of pictures, typed or printed data, and other similar information which cannot be sent by conventional communication methods.

In announcing the agreement, Mr. Caverly stated that the acquisition of Finch Facsimile rights by Automatic Electric is in line with the program of the telephone industry to expand its facilities and services to embrace various supplementary types of communication. He pointed out that by supplying Finch Facsimile equipment, Automatic Electric will place telephone companies in a position to provide a new and highly valuable service to their subscribers.

"We will begin immediately to tool up for the production of Finch equipment", said Mr. Caverley, "with the expectation that with a few months we will be in a position to make shipments not only to telephone companies, but also to other business, industrial and service organizations whose operations require the instant and accurate transmission of printed matter, charts, drawings, or photographs as an accelerated substitute for transmitting such material by mail or messenger."

◆

Telecommunications Division Moves to New Building

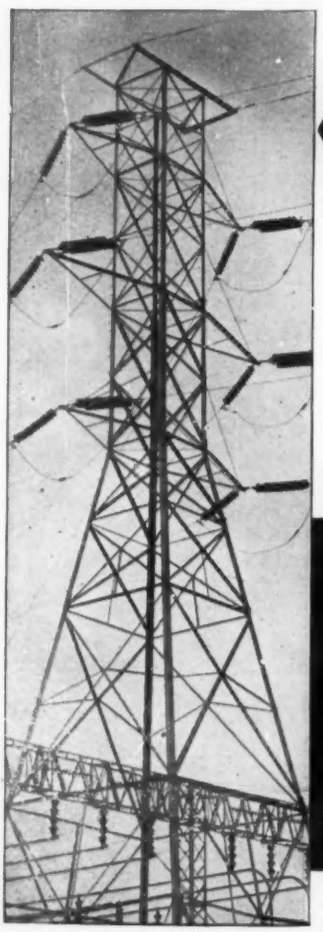
The telecommunications Division of the State Department was moved January 23 to the former New War Department Building at 21st St. and Virginia Ave., N.W., Washington, D. C. The reception office of the Division is Room 7002. The telephone extension for Francis C. deWolf, Division Chief, remains the same, REpublic 5600, extension 550. A number of the State Department branches and divisions have been moved to this new building.

A. T. & T. Seeks to Build Experimental Stations

The American Telephone & Telegraph Co. has filed application with the Federal Communications Commission for authority to construct terminal stations in New York and Chicago for an experimental radio-relay communication system.

With installation of this system between New York and Chicago, A.T.&T. plans further experimentation with the radio-relay method of transmitting telephone conversations and television programs. A similar system is now in construction between New York and Boston. Field trials are expected to be made this summer.

The proposed New York-Chicago system will take about three years to engineer and construct.



DILLON DYNAMOMETER

A multitude of Dillon Dynamometers are protecting communities and companies alike from failures caused by wires going down in severe storms. Standard for dependable accuracy, simplicity and convenience. Actual size 8¼" x 6¼" x 3". In wide use also in telephone and telegraph work for indication of tension in guy strands, messenger and wire. Many other uses where torque, weight, and overload are vital factors. Take out guesswork of "sight and sag". Hooked on in a jiffy, indicates tensions in seconds. Direct reading. Nine capacities, 500 to 20,000 lbs. There's a place for the Dillon in every Electrical Plant.

Send for illustrated Dynamometer Manual.

W. C. Dillon & Co., Inc.
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An Exclusive TELEPHONE ENGINEER Feature

MANAGEMENT Quickie

FLAT RATE Differentials

REARRANGEMENT and readjustment of flat rates for the classes of service in a telephone tariff involves consideration of several factors. When revenue improvement for the telephone system is the primary object the gross increase must be apportioned among the grades of service. This apportionment of the revenue increase must take into consideration eliminating existing or establishing new classes of service.

Readjustment of rates for several classes of service may also be made necessary by plant congestion. Community development along unexpected lines may suggest offering grades of service more saleable than any presently being supplied. These three conditions necessitate consideration of *rate differentials.*

It is generally difficult to secure authority to withdraw any grade of telephone service presently offered. The establishment of new service with advantages over the grade to be withdrawn is the preferred method of procedure. Thus the objectionable service is gradually discontinued by the public selection of the new. An illustration is the offering of two party divided circuit *selective* calling residence service in place of two party *nonselective* residence service. The rate for the newly offered grade of service should not differ too greatly from the rate for the grade of service being withdrawn.

It sometimes happens that a superior grade of service has been established at a rate which is too low in comparison with the next lower grade. An illustration of this would be a tariff in which *individual* residence service was being supplied at a rate which was only, for illustration, 15c net per month higher than the rate for *two party* residence telephone service. Obviously this would result in the selection of the individual in place of the two party residence service because the *differential* between the two rates is too small. This causes congestion in the plant because cable pairs, to an inequitable extent, are needed to supply the individual service. The remedy for this plant condition is to increase the differential by increasing the individual rate so that the two party service is relatively more popular and the ratio between cable pairs and telephone stations is raised.

When, for illustration, a new factory district is established in the community it often brings an influx of prospective telephone subscribers for cheap service. To satisfy the demands for this class of service, which for illustration might be four party residence, a rate should be established having a sufficiently high *differential* compared with the next higher grade of service so that cable plant may be designed adequate for a large four party development without the danger of congestion due to a too small differential.

◆

NOTE: *Space requirements prescribe condensation of this material. Reader's time economy demands brevity. If you are not clear on any point or take exception to any statement you will confer a favor on the author by writing for consideration of your opinion or further expansion of the text in the interest of clarification. THANKS.*—**JAY G. MITCHELL.**

Coming Conventions

Texas Telephone Association, Plaza Hotel, San Antonio, March 11, 12 and 13.

Kentucky Independent Telephone Association, Brown Hotel, Louisville, March 26.

Illinois Telephone Association, Hotel Pere Marquette, Peoria, April 3 and 4.

Nebraska Telephone Association, Hotel Lincoln, Lincoln, April 8 and 9.

United States Independent Telephone Association Executives' Conference, Edgewater Beach Hotel, Chicago, April 14 and 15.

Ohio Independent Telephone Association, Deshler-Wallick Hotel, Columbus, April 22 and 23.

Indiana Telephone Association, Claypool Hotel, Indianapolis, May 7 and 8.

United States Independent Telephone Association, Stevens Hotel, Chicago, October 14, 15 and 16.

Missouri Telephone Association, Governor Hotel, Jefferson City, November 17 and 18.

Minnesota Independents Lay Plans to "GO AHEAD" in 1947

(Continued from page 34)

be accomplished in the "not too distant future."

"Nearly every one knows," he stated, "and if they don't it is time that they get informed, on what the REA is planning in the rural telephone field. . . . Here then, is the challenge—are we going to do it or are we going to sit back satisfied with what we have, and let some one else do it? It is inconceivable to me that the telephone people will do this. . . . . Let us recognize the situation as it is—decide to do something about it—and *then do it.* We have the brains, the tools and the equipment."

Mr. McInnes recommended that telephone companies in his state examine their rate structures—"take them apart and see what you have, and don't be too much surprised if you discover that there isn't much of a structure."

"Many companies today," he stated, "are operating with the same rates they started with 30 years ago—I know this to be a fact. This is tragic and must be corrected promptly. There is no mystery about rates, they are a proper charge for service performed.

"About 50% of the small companies in my state have, in the last 3 years, applied for and received increased rates, but most of them didn't ask enough—generally 25 cents per month. Those who figured their costs closely and allowed something for the future received adequate rates. People generally are willing to pay an adequate rate when the service is satisfactory. In the numerous hearings on rates the last three years, many subscribers appeared and stated they knew costs were higher and they were willing to pay an adequate rate for good service. In every case these subscribers linked rates with good service. I cannot recall a single instance where there was any opposition to increased rates if the service was satisfactory, or would be made satisfactory. The Public Service Commission is very interested in the small telephone companies and wants to see good service extended to as many people as possible. The Commission also knows that generally rates are not adequate, but they cannot do anything about it unless you ask them."

"Now, just a word," he added, "to those who have asked for and received a 25 cent per month increase and to those who may be figuring on asking for a 25 cent increase when they should have asked for $1.00, or at least 75 cents a month. You haven't helped the situation very much—all you got was a palliate, a little lessening of the pain, but no cure.

These three telephone men were having an interesting discussion of convention activities when the TE&M camera came along. LEFT TO RIGHT: ART KRUEGER, of Automatic; KEN GILLETTE, Automatic's supply sales manager, and GEORGE REVERING.

I think this will be very obvious when the balance sheets are figured out at the end of the year."

Mr. McInnes closed his address by recommending that the telephone companies make more use of their Telephone Association.

"Every commercial company in the state," he said, "should be a member, take part in the meetings, bring some of their employees to the conventions, whereby they can meet and get acquainted with others in the business. It is the one big meeting in the year where all can get together, meet old friends, make new ones, and discuss their mutual problems.

"Many of the small Associations have a part time secretary and, while he may not be in a position to do as much for you as a full time secretary, it might surprise you the help he can give you, if you would consult him. Pay your dues promptly, answer his letters, send him a copy of your annual reports and reports to the tax commissioner, and when he sends out a questionaire for specific information, see that it is returned promptly. I have in mind presently a questionaire that was sent out about 2 weeks ago asking rural station development during the year 1946. This information is of prime importance to the USITA committee in Washington to show Congress that the telephone industry is meeting the rural problem and more, that it is being solved."

Suggestions For Iowa Companies

AT the session on Tuesday morning morning January 28 the audience was addressed by Wm. F. Miller, secretary, Iowa Independent Telephone Association Des Moines who discussed "What I Would Like the Telephone Companies Of Iowa To Do." Mrs. Wm. Saltmarsh, vice president of the Lakedale Telephone Co., Annandale, presented an interesting discussion detailing ways and means of "Securing Subscribers' Indorsements for Increased Rates." Her topic was very well handled and presented the importance of letting every subscriber know the plans of a company for improving service, the costs of such improvements and the real reasons rate increases are necessary.

Mr. Miller, in his opening remarks said: "With one eye on the subject, and the other on the present over all picture in Iowa, I am impelled to get down to certain fundamentals—to reach out mentally and think of the small companies. After all, Iowa is an Agricultural state, and the small companies are the ones that stretch out over hill and dale and serve the farmers.

"I have no particular suggestions or urgent *'would-like-them-to-do's'* concerning the larger companies. Their future is secure—as secure as any other business in this day and age. They'll get along."

Mr. Miller stated that, "The many little things which add up to good service, are simply a result of good management. All these little things will eventually come from just having a telephone manager; one who is able to spend a reasonable portion of his time doing other than routine things; one who has time to visit with other companies, read the trade journals, and devote some time to making plans, thinking through and executing changes, all of which spell progress and better service.

"Because our business is not competitive in the strict sense of the word, the great fraternity of phone men and women are most willing to swap ideas and help one another. The larger companies, with broader experience and more specialized individuals are always glad to help the other fellow. This is a good situation, yet in all too many cases, the fellow that needs help is indifferent to his situation and remains aloof."

Reviewing the comparative status of Iowa and Minnesota telephone companies, Mr. Miller stated that the two states have about the same population and phones per capita. The number and size of Minnesota's Independent companies runs proportionately parallel to the number and size of the Iowa companies. Iowa, with more Independent stations has more companies, and particularly the small ones. The ratio of Independent magneto telephones to Independent common battery and Independent automatic for the two states is fairly close. In Iowa, about one Independent station in every 25 is automatic, and about one Inde-

pendent station in every 5½ is common battery—this excludes the small amount that are automatic.

Iowa has 540 Independent companies operating about 800 exchanges. Right around 60 of these companies operate 500 or more telephones. About 350 of the 480 below the 500 mark, operate less than 300 stations.

"The small companies," Mr. Miller said, "reach out over hill and dale to serve the farmers. In that connection, the Independents as a whole—including the switchers or service station lines—own about 3½ miles of pole line to every one of the Bell company, whereas the Bell serves about 1½ times the number of Independent stations. These Independents serve about three-fourths of the total area of Iowa.

"So much for figures. Why am I concerned about them? In the first place, a large percentage have an unpaid President and an unpaid or sorely underpaid Secretary. In general, these officers are the operating heads, the management, and they are serving out a term of office which came to them because it has been customary to rotate the offices, not to pass around the honor which might be connected with it, but because its a thankless job that nobody will accept for more than a year or two. And, during their term of office, John or Mike, is watching the calendar and waiting for the day when someone else will step in."

Mr. Miller stated that this condition is not conducive to constructive planning and forward thinking.

"In fact," he said, "it is conducive to *nothing*, except ultimate collapse. Even if Mike, the President, is convinced that this and that should be done, he also knows it would require a raise in rates and he certainly doesn't want to be the one to start anything like that.

"That is a general picture. There are many variations to it, but the theme is recognizable in most cases. In those cases where Joe has been elected President year after year, it is too often because he has been ultra conservative—by not touching the rate structure, or anything for that matter, and has thus unwittingly brought the company to the present level of alarm.

"Why do I use the word present? Hasn't this been going on for years? Why be so concerned now?

"The war seriously affected this pattern in several ways. For too long a period, just the bare necessities which they had been buying practically disappeared from the market. What labor they had drawn upon, up and left them. In fact, about everything and everybody disappeared except "ole man D. E. Preciation." He had been with them ever since the first pole was set in the ground, although most of them ignored his silent pleas for sustenance. Now the old man's neglect is a major concern. They realize they should have put away a little for his later years. In many cases the grade of service has reached such a low level that to suggest a sizeable assessment would be like touching off the proverbial powder keg.

All was well with this group at recent Minnesota convention. LEFT TO RIGHT: WARREN CLAY, Hutchison; MISS LUCILLE KOEPP of Minnesota Railroad & Warehouse Commission, and TOM MACOUBRAY, St. Paul.

"Moreover, the momentum behind the demands for more and better service which the war created, has brought these companies face, to face with reality. Now that the companies in this category are face to face with grim reality there is little time to lose in meeting the situation. I realize that in the past decade or so, the problems of these small companies have been cussed and discussed. However, the all too large percentage that have not heeded the warnings now have despair breathing down their necks.

"Now, here is what I would like these Independent telephone companies of Iowa to do. Get those in control and with authority, to sit down around the table and face facts, and at the same time be in the mood to want to do something. I wish they would sit down and make an honest and thorough analysis of their company. Put the company on the table and take a good humble look at it. As in a self-analysis, bare all the faults and sins of the past, and then resolve to carry out specific plans.

"I believe something like the following would be a beneficial pattern or guide for the President or Chairman of such a meeting:

'Boys, let's be brutally frank with ourselves and come up with an answer. Let's squarely face our responsibility to the subscribers, most of whom are stockholders too. Here are a few questions to get the discussion started: (1) Are we being fair to our subscribers?, (2) Have we been fair to Mert and Mable and Mary who have been with us so many years?'

"At this point in the meeting, an honest, thinking, individual, would admit that they have been selfish, unintentionally, yet selfish. He might put it this way: 'While our neighbors a few miles away have been paying $2.00 per month for years, for telephone service, some of us have been boasting about our dollars service. We have maintained $1.00 service by being unfair about what we have been paying Mert, Mable and Mary. What's more, we and our predecessors have dodged this issue and that issue—and sizeable expenditures— and we never have kept any books—until now we are just about out on a limb. Yes, for years we have been telling ourselves that we are a mutual company, not operating for a profit. It is now clear that we have been slipping backwards—we have ignored depreciation—and changing conditions have put us way behind and we are just now admitting it.' Such a statement, ladies and gentlemen, would be a step in the right direction for many of our small companies."

Mr. Miller stated that "After talking things over in a candid, self-critical vein like this, certain conclusions would inevitably be reached. Of course, the size of the company, the size of the bank balance and the condition of the plant are factors which would vary the outcome somewhat, but, one or two points would stand out.

"I believe two conclusions would be along this line: (1) A couple of farmers and a banker can't run this business as it should be run. Joe is a good and faithful lineman but we need active aggressive management to look after all phases of the business, and (2) We need to approach our Independent neighbors and try and work out a plan together.

"I believe the salvation for the bulk of these small companies is to work out arrangements so that the cost of adequate and efficient maintenance help and capable management can be spread over 1000 or more stations and thus keep the cost per telephone reasonably low. Iowa has so many small companies, all over the state, it would make such a trend feasible.

"Getting together would not necessitate consolidation and each company losing its identity. Plant costs, management

and accounting costs could be apportioned as expense items on the basis of time spent and material used. This would mean that the Podunk Mutual Company could retain the name of Podunk Mutual, but it would be looked after by a telephone manager which it could not possibly afford by itself. Likewise the general books for the Podunk exchange would be kept up to date in a manner which they could not otherwise afford.

"Ultimately, Podunk and its other small neighbor, Squedunk, would be rehabilitated and cut over to dial. The larger exchange, Homeville, would be the manual office with information, repair, toll operating and other functions vested in it.

"One very important point, whether Podunk Mutual retains its identity or is blended in with the Company at Homeville and that is this: The manager would have to be given the authority to set rates. An adequate rate is the keystone in the arch which supports a company and insures its ability to stay in business and render good service and continue to progress."

Mr. Miller stated that with a sound plan and the right person, assistance would not be hard to find.

"Granted," he said, "there are many individual company circumstances, I believe it is a suitable pattern. Far too many small companies are limping along the edge of the cliff of despair. Some will lose their balance. A few already have. Our Association has concluded that *it may be later than we think.*

"The influence and effects of the war, as mentioned previously, have brought the situation rather abruptly to a head. We have started and we are going to continue to make an honest and sincere effort by taking aggressive steps to get out and help the small companies. In the relatively few months I have been Secretary, it has become more and more apparent that this pattern of thinking is one step that has to be taken out and sold to the individuals in the small companies."

Mr. Miller commented on the fact that one other very important point which cannot be evaded in a discussion like this, concerns personnel.

"There is nothing," he said, "to attract or keep the right kind of management people in the small companies. I think you will agree that very high rates would not be the only solution to the small companies predicament. Proper management is a necessary complement to round out the picture. High rates without reasonably good management would breed all kinds of discontent and wasteful practices.

"While there is a definite, yes even critical, shortage of the right kind of management and technical personnel, I sincerely believe that the present situation can be worked out in a reasonable period of time. It will first take some honest, frank, self-appraisals such as I have outlined and then some forward thinking. When that step is accomplished, *the beachhead will have been established. You folks know, that to Americans, when a beachhead is established, the ultimate objective is just a matter of time.*"

"I'm going out of town for a few days, and I want you to guard that telephone with your life!"

The final speaker of the morning session was Wm. Angle, chairman of the Board of Directors, Stromberg-Carlson Company, Rochester, New York. His address on the subject "Let's Tell America Now." brought out the fact that "It's time to concentrate on the achievements of America, time to realize the full benefits we enjoy, and then to go from there to build an even better land, and also to do what we can for the people of less fortunate lands."

"I am not one to castigate enterprise just because it is large," Mr. Angle said, "but I do know enough about the difficulties that arise as an institution grows tc realize the absolute folly of thinking that our economy can be most effective when all the thinking is done at the top, or by men who have had but little experience with the endeavors they are seeking to oversee.

"You can set general policies at the top, those in other positions must within the boundaries of those general policies run the show. We in the Independent field have occasion to realize these truths right well. Only the other day I was talking to the division manager for one of the bigger companies with headquarters out this way. 'They give me great freedom of action, said he, I really have to submit only my budget.' And under wise management at the top and in its component parts that company is growing and succeeding.

"And yet there are those who exclaim over our shortcomings . . . They want to put us under a system wherein some outside control point, perhaps with high motives but surely far away and subject to but little local control, makes all the decisions, though to do so it has to put us all in a common mould. The day of free private enterprise has passed, they say. To which I would reply, 'Oh, yeah?' "

In closing his address, Mr. Angle stated that "Nowhere else have men been so free to plan and to act, to compete, to dream and to create products from their dreams, to step beyond the bounds of educational shortcomings or circumstances, acquire the skill or information or finances they needed, and build great institutions.

"And through all of this in our land of opportunity and achievement we find as a full fledged part of our American scene amidst our freedom of religion, and political and economic freedom, and strongly bolstering all those others, freedoms which are so desirable, likewise the American system of free, competitive, private enterprise. And it shall, it must, endure. Let's tell America, all of us, constantly, completely, and *now.*"

Clyde Bailey Reports On National Affairs

AT THE afternoon session January 28, the audience was treated to a diversified program of speakers. R. C. Reno, Chicago, discussed "Let's Go

On The Offensive"; Paul W. McCracken, division of research, Federal Reserve Bank, Minneapolis, covered the "Economic Situation At The Opening of 1947"; Clyde Bailey, executive vice president of the United States Independent Telephone Association, Washington, D.C., brought the audience up-to-date on all Washington activities of the national group, and the final speaker, P. E. Fader, commercial representative, Northwestern Bell Telephone Company, Minneapolis, Minn., discussed "Extending and Improving Telephone Service in Rural Areas."

In his opening remarks, Mr. Bailey paid high tribute to the Minnesota association and referred to it as "the one of the best run telephone associations in the country."

"It has succeeded," he said, "because it has deserved to succeed. It has succeeded because it has had an able board of directors to serve it over the years. It has succeeded because of an enlightened and sustained interest in its work on the part of its membership.

"But even more, it has succeeded because for many years it has had as its paid officer a man of the loyalty, the crusading instincts, and the ability to produce results of Jack Crowley."

Mr. Bailey stated that in his opinion telephone men and women "possess the qualities of leadership and that they have a great faith in their future and in the future of their communities."

"In every town," he said, "telephone men and women are found in the forefront of economic and social life. They are pioneers. They have dedicated their fortunes to the business in which they are engaged. Most of these qualities will be found in people in public utility callings, whether it be telephone, gas, electricity, or transportation.

"Notwithstanding all of this it is a fact that those engaged in utility callings have been the subject of continual criticism by certain self-appointed paragons of social progress and proper thinking. Those paragons have attempted to spread the belief that public utility enterprise is synonymous with reaction."

Mr. Bailey stated that bills are now pending in Congress to deal with the strike menace. "Congress knows," he said, "as the great historian Acton said, that 'power tends to corrupt and absolute power corrupts absolutely.'" . . . Those of us who attended our convention in Chicago last October will recall that we adopted a resolution in the nature of a memorial to Congress asking for anti-strike legislation, amendment to the very unfair Wagner labor relations act, and amendments to the Wage-Hour Act.

"The National Association is watching the development of all labor legislation with the utmost care. We shall hope that the bills that will be reported out by the Senate and House committees will be constructive measures to which we can give our utmost support, and which will prevent a few unscrupulous men from paralyzing the economic life of American communities."

Speaking of the minimum wage bills, Mr. Bailey stated that four bills relating to this matter have "so far gone into the hopper, compared with nine at the last session."

"The four," he said, "all introduced by Democrats, were put in by Senator Pepper of Florida, Congressmen Celler and O'Toole of New York, and Mrs. Norton of New Jersey.

"The Norton bill is a short measure which increases the minimum wage to a straight 65 cents, retroactive to January 1, 1946. The other bills would increase the wage to 65 cents now, 70 cents next year, and 75 cents the year after that, with power in the Wage Hour Administrator to convene industry committees to accelerate the 75

(Please turn to page 67)

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Damaged TELEPHONE CABLES SEND Their OWN ALARMS

(Continued from page 30)

Sometimes the physical damage suffered by a cable results in "crosses" or "grounds" on some of the wires. In such a case the testroom man can make resistance measurements and locate the break without waiting for the repair gang to determine pressure gradients, for the Wheatstone bridge will put its finger down very close to the actual trouble.

Where Gas Would Have Helped

IN the early days, when gas in cables was unheard of, the only prevention against porous solder work and punctured sheath was to make a time-consuming and laborious visual inspection—which might or might not detect a defect. As long as joints were properly sealed and the sheath was unbroken, the cable would give no trouble; but when they were not, there was plenty of work for the outside maintenance and testroom people. Almost any not-so-old-timer could tell stories of drowned cables. For instance—

Some years ago, a group of cable splicers had just finished cutting over open wires into a brand-new toll entrance cable. It was a raw day with high wind, and by late afternoon a blizzard had set in. The men who had been working on the poles were still thawing out frozen fingers when the report came from the testroom that one of the circuits which had been cut over had failed. While they were looking for trouble at the terminals, another circuit went out, and from then on it was a succession of trouble reports.

Measurements located the trouble near a river crossing. There was nothing for the splicers to do but spend most of the night back-tracking on their job, cutting the wires back to the old open-wire line.

The next day they dug down to the cable beside the river crossing. There was a hole in it, covered with a clumsy wooden clamp. Investigation showed that some workman, digging a ditch, had struck the cable with his pick a number of days before, and instead of reporting it, he had covered the hole with the clamp. The storm on the day of the cutover had raised the water level until it reached the cable. Gas pressure would have kept the water out of the

The pipe at the left of the pole, rising from a gas-filled buried cable, permits testing of both the gas pressure and the contactor alarm at this point, and also enables the cableman to talk with the test board.

cable and given warning of the break, so that it could have been repaired before the cutover was made.

On another occasion a cable in a duct underneath a bridge failed when a flood submerged the duct. When the water receded, a large hole was found in the cable sheath, evidently caused by lightning. As the duct was normally dry, it is not improbable that the cable had lain in this condition for months.

These are typical examples of what used to happen before the days of gas pressure. Holes and cracks would develop in cable sheaths, but in the dry season no one would have warning of them. When the rains descended and the floods came, every testroom in the storm area would be in an uproar. In contrast to this, gas pressure tips off neighboring testrooms soon after a break of any kind occurs in a sheath, permitting repairs, before service is affected.

(Please turn to page 55)

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Combines cable termination with protection of central office personnel and equipment against high potentials and sneak currents. In operation, it opens the switchboard circuit, grounds the outside line, and operates an alarm circuit. Note these construction and operating features:

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3. Line and switchboard connections on opposite sides of protectors.
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5. Unit dischargers, consisting of two carbons, separated by acetate dielectric cemented together, permanently grounds the outside line under continuous discharge.
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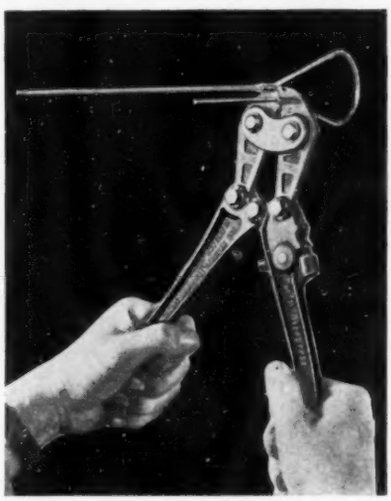

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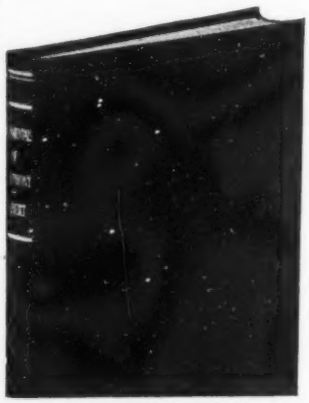

This first new telephone book in years tells how modern telephone systems operate, giving the electrical theory and the technical information on equipment and circuits that will be most helpful as a foundation for the non-engineering worker in telephone installing, servicing, etc.

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7720 Sheridan Road Chicago 26, Illinois

An early use of gas for the purpose of testing the tightness of solder work in a telephone cable was initiated about 1912 by the Bell Telephone Company of Pennsyvania. In this use, plant forces gave a cable what was called the "flash" test: dry air was forced into a section of the cable and they listened for gas leaks and checked gauge readings at either end of the cable for 10 or 12 hours.

Dry air was also recognized as a means of dessicating a wet cable. When the air was forced through such a cable, it dried the paper insulation—just as one of those hot air devices in a washroom dries the hands.

The great difficulty experienced in the use of air was to free it from moisture. Moreover, the air-conditioning apparatus usually consisted of a compressor and a number of large storage cylinders containing trays of calcium chloride, put there to absorb the moisture. This apparatus was cumbersome, and required care to produce air sufficiently moisture-free.

Soon after World War I, the French introduced the process of testing cables with an absorbent gas, carbon dioxide. This was much more effective and economical than the chemically dried air.

Although the carbon dioxide apparatus was superior to the air-drying equipment, it had numerous disadvantages. Unless the tanks were kept at a reasonably high temperature, carbonic snow formed at the outlet, which did not improve the flow of the gas. Also, water formed in the bottom of the tank, which had to be drained off.

In 1925, the A. T. and T. Company's Department of Development and Research (now incorporated with Bell Telephone Laboratories) issued the results of tests with oil-pumped nitrogen, which indicated that it was superior to either carbon dioxide or dried air. While the supply of this was limited, sufficient quantities became available and it has since been universally used in the Bell System. It has none of the disadvantages noted above for carbon dioxide. It is obtained from the manufacturer in cylinders under a pressure of about 2000 pounds per square inch, and regulators are used to reduce the pressure at the outlet to the desired value.

IN JULY 1925, Long Lines made its first extensive use of nitrogen gas for testing, on the aerial line being built between South Bend and Toledo. While the main thing this test proved was that the soldering job on this cable was 100 percent in the sections tested, it suggested the idea of making similar tests on an underground cable. At that time the "C" cable was being placed between Boston and Providence. The splices on this underground cable were "flash tested" with gas pressure and 38 small leaks were found in the 760 splices tested.

Shortly after this, in the Spring of 1927, gas pressure was introduced into the old Philadelphia-Reading "A" cable for a distance of 30 miles, as a permanent protection from excessive moisture trouble occasioned by ring cuts and cracks in the sheath. It was on this cable that the first gas pressure plugs were introduced. These plugs, shop manufactured sections of impregnated cable about 10 ft. long, spliced into the main cable, prevented the gas from flowing out of the terminals and into the many branch cables. The first arrangement had valves at intervals of 2½ miles, pressure.

AFTER the cable was charged, daily pressure gauge readings at the valve points indicated low pressure in two sections, each about three miles long. With the object of locat-

(Please turn to page 58)

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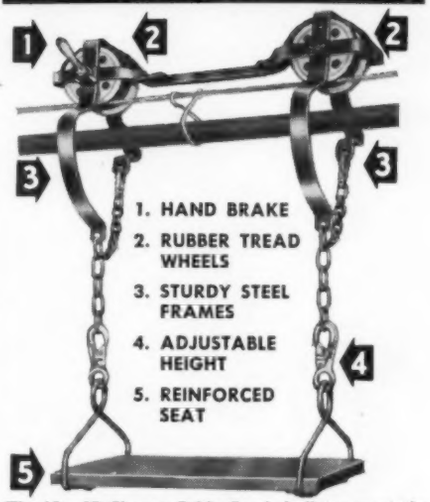

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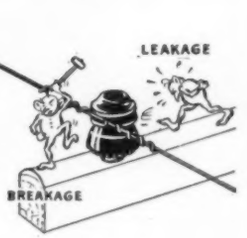

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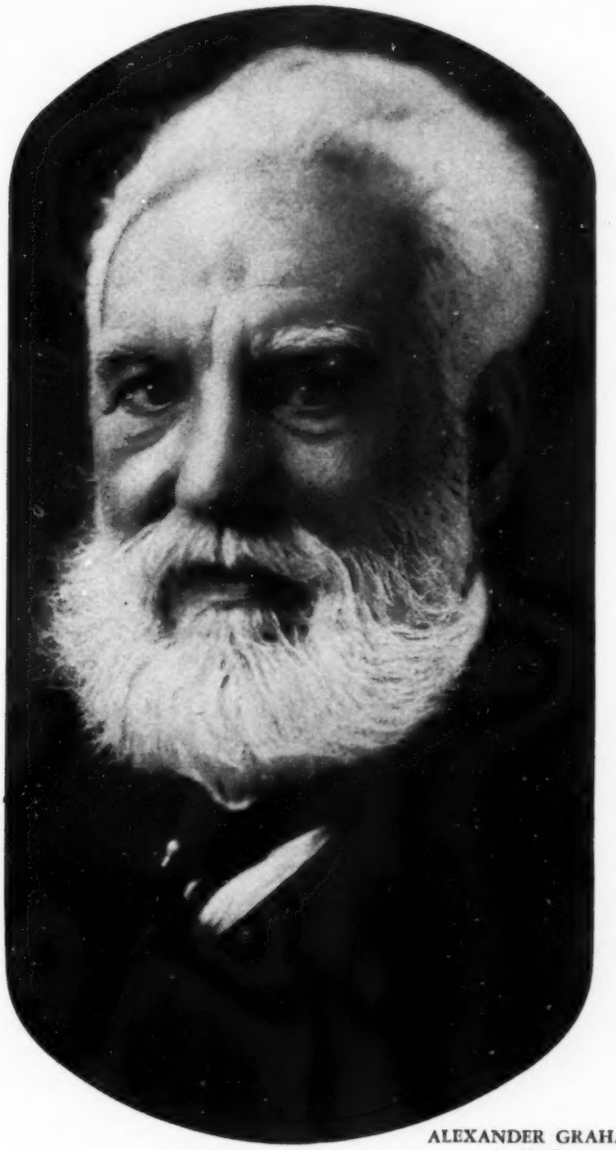
Next month we pay tribute to the man who invented the telephone. • This anniversary will have special meaning for us in the telephone industry. For we, more than others, are privileged to witness every day the countless ways in which the telephone serves humanity. • As part of the anniversary observance the commemorative advertisement on the opposite page will appear in national magazines during February.

AN ADVERTISEMENT OF THE BELL TELEPHONE SYSTEM

★ 100th Anniversary of the Birth of Alexander Graham Bell • March 3, 1947 ★



ALEXANDER GRAHAM BELL
by Moffett, 1918

He gave the world

a new voice

Alexander Graham Bell was a teacher of the deaf. He was also a trained scientist who made it possible for millions upon millions of people to hear each other by telephone.

The telephone brought something into the world that had not been there before.

For the first time people were able to talk to each other even though separated by long distances.

Horizons broadened. A new industry was born, destined to employ hundreds of thousands of men and women and be of service to every one in the land.

Alexander Graham Bell was a great humanitarian, not only as a teacher of the deaf, but in his vision of the benefits the telephone could bring to mankind.

Bell's vision has come true. It keeps on being an essential part of this nation-wide public service.

BELL TELEPHONE SYSTEM

ing the cause of leakage in these two sections, a gas flow indicator was developed. This consisted of a U-shaped glass tube filled with oil. Since the gas pressure decreases as the leak is approached, by connecting the indicator between two valves a few feet apart, the column of oil would be depressed on the low-pressure side — which would be in the direction toward the leak.

This worked all right for large leaks; but when the location of small leaks was attempted, it was soon realized that the old familiar Charles's Law operated inside telephone cables as well as anywhere else, and consequently gas expands in a section of higher temperature and flows to one where it is lower. This introduced considerable difficulties in the search, since it upset the small differences in pressure on each side of the leak.

One ingenious proposal for the solution of this difficulty was the use of scented gas to locate trouble. Gas scented with peppermint was tried, but it was found that the paper insulation around the wires in the cable absorbed the peppermint flavor, and the escaping gas was odorless. Other odors were equally ineffective, and the problem in this particular case was finally solved by isolating the low sections through the installation of temporary gas plugs. This led to the introduction of permanent gas-tight plugs at 10-mile intervals to reduce the length of the section under test. These plugs were made in the field by cutting away a section of the sheath, covering it with a lead sleeve and filling the sleeve with a hot wax or asphalt compound.

Gas Pressure Is Standardized

DURING the next few years, interest in the possibilities of gas pressure to reduce cable failures was at a high level in the Long Lines Department. Late in 1927, instructions were issued to the field to pressure-test all cables being installed, in order to locate construction defects. About this time, it was also decided to place all Long Lines underground toll cables under permanent pressure, and in 1929 a similar treatment was decided upon for aerial toll cables. All the experience with methods and materials which had been gained during the trials was then issued in instruction form.

A lecture-demonstration in the field, part of a training program to keep maintenance and supervisory personnel posted on methods and developments of gas pressure testing.

In the Summer of 1931 an exhaustive series of tests was made by the Bell Laboratories on a 25-mile section of underground cable between Morristown and Chester, N. J. As a result of these tests, it was concluded that the pressure in underground cable should be reduced to nine pounds and contactors set to operate six pounds, and in aerial cable the pressure should be six pounds with contactors set to operate at three pounds. The contactor spacing was set at two miles, the valves (for recharging and pressure testing) were spaced at 3,000-foot intervals, and the length of a gas section was set at 10 miles.

The Morristown Tests

THE Morristown tests resulted in numerous other important contributions to gas pressure practices. Engineers developed a formula for charging cables with gas and introduced a new type of gas flow indicator and mercury manometer for locating small leaks.

The gas flow indicator is a hollow glass valve so arranged that when gas in the cable is by-passed through it from valves installed a few feet apart on the cable, the flow of gas will blow ammonia fumes over a small strip of chemically treated paper and cause it to turn pink. The direction of flow is determined by observing at which end of the valve the treated paper changes color.

The manometer consists of a long calibrated glass tube containing a column of mercury similar to that in a thermometer. When the manometer is connected to a valve and the gas pressure in the cable applied, the column rises. This allows a much more accurate reading of pressure than had been possible with the standard pressure gauges, and thus greatly increases the precision.

A similar test was undertaken a few months later on an aerial cable between New York and Southfields. Among other things, these tests showed that variations in temperature throughout an aerial cable were too small to seriously mislead cablemen in locating a large leak, but did cause difficulty in finding a small one. It was also found that there were certain periods when temperature changes were at a minimum, at which times it was much easier to find a small leak. The best times, the tests indicated, were on a cloudy day or in the interval between dawn and sunrise.

SOME idea of the exhaustive nature of the studies of the subject of vapor phenomena in cables is revealed by a glance at the instructions covering gas pressure work. For example, corrections must be applied for change in altitude of a cable climbing a mountain, as well as for variations in temperature and in the

NOTICE

Due to lack of space it was necessary to omit from this issue, Part II of "MODERN TESTING METHODS" by B. C. Burden. Series will be resumed in your March 15 issue of "TELEPHONE ENGINEER AND MANAGEMENT".

barometer. Allowance must also be made for the different resistances to the flow of gas in cables of various types and make-up. Gas sections longer than the original 10 mile length have been found practicable in the newer cables, and where two cables are on the same route they are connected together at the plugs to form so-called circular gas sections. This latter arrangement is a distinct advantage from a protection standpoint, since it does away with the danger that a leak occuring close to a plug will quickly drain the gas on the plug side and allow water to enter the cable.

In order to keep the maintenance and supervisory personnel posted and trained in the latest developments and methods, gas pressure training courses have been held throughout the Long Lines Plant Department. A novel feature of these courses is apparatus which visualizes the behavior of the gas pressure in a cable when leaks occur. This consists of about 1000 feet of small-size cable simulating a normal gas pressure section, with 21 manometers connected at 50-foot intervals and mounted side by side. These manometers show the pressure along the cable and permit the men to see at a glance just what happens to the pressure under various conditions.

Long Lines Training Program

THIS training program has been divided into four different courses. A half-day appreciation course is given to Long Lines and Associated Company supervisory and management people who are broadly interested in the subject. The remaining three courses, each of two weeks' duration, are respectively; for those field people who are actively engaged in placing and maintaining cable under pressure; for those directly concerned with the supervision of gas pressure work; and for those engaged in engineering gas pressure systems.

The apparatus illustrating behavior of gas pressure in a cable was made up into several portable exhibits which traveled all over the country. This apparatus and the four training courses have brought the facts about gas pressure to hundreds of Bell System employees—to those in the Long Lines who have had the job of keeping an eye on that Department's 18,000 miles of sheath, and to Associated Company people who are engaged in the installation and maintenance of toll cables.

The protection to service afforded by gas pressure is becoming increasingly important with the introduction, in the last few years, of K-Carrier systems in existing voice frequency cables, whereby twelve telephone circuits are superimposed on one pair of wires. Such protection is even more important for the Bell System's new coaxial cable network, which is now being installed throughout the country. Without it, the concentration of so many important circuits under one cable sheath would be hazardous.

As is usually the case in regard to telephone facilities, the most exhaustive sort of test cannot write the last chapter to gas pressure technique. For example, the introduction of a new type of cable—the buried cable —resulted in a need for more accurate leak locations. The various types of sheath protection with which these buried cables are covered may cause gas to flow under the covering for a considerable distance from the actual break in the sheath before it is released. However, refinements in methods and equipment for locating a sheath break have been developed, and specialists in gas pressure feel that whatever problems may be created by new designs of cable, they will be able to solve them.

THE END

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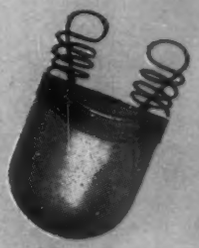

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Earl Neir Retires from Automatic Electric

After 43 years of continuous service with Automatic Electric and its affiliated companies, Earl R. Neir, staff engineer, retired at his own request on December 31, 1946, at the age of 68. Long experienced as an all around telephone engineer, he was especially well versed in methods employed in factory production, installation and maintenance of Strowger Automatic telephone equipment. For many years he achieved particular recognition as one to whom executives

W. J. CAVERLEY (left) Automatic Electric's president extends his wishes to EARL NEIR (center) on the latter's retirement, while C. S. CADWELL (right) executive vice president, looks on.

of the company could and did turn for working out difficult problems in those fields of the telephone industry.

As a graduate of the Electrical Engineering Department of the Case School of Applied Sciences, Cleveland, Ohio. Mr. Neir enrolled in 1903 in Automatic Electric's student training course in Strowger Automatic telephony. He then spent three years as a company maintenance man on automatic equipment in various Strowger exchanges throughout this country and one year as assistant to the general superintendent of the company at Chicago.

In 1908, Mr. Neir was made superintendent of the Installation and Operating Department of Automatic Electric, and until 1923, for fifteen years, he supervised every installation and cutover of Strowger equipment made in the U.S.A. Among them and unique for their size, importance and significance in the advancing science of automatic telephony, were the automatic installations at Chicago, Minneapolis, St. Paul, Buffalo and Indian-

W. O. BUNDY, (left), of Fairbury, Neb., with 42 years of service with the Lincoln (Neb.) T. & T. Co. received his service pin from JOHN H. AGEE, Vice President and General Manager, during recent ceremony.

apolis. As a result of these activities and contacts, he became widely known among operating telephone men in this country and was frequently sought after by them to assist in their operating problems.

In 1923, Mr. Neir was advanced to the position of factory manager and five years later, became assistant chief engineer of the company. Since then he has consecutively been general superintendent of equipment, chief engineer and, since 1938, staff engineer. In those positions of trust and responsibility, he has made valuable contributions to the company and to the industry in devising and putting into operation improved methods and machinery as well as in the design and operation of equipment.

As the use of Strowger equipment grew in this country and abroad, his services were sought after and highly valued not only in the United States but also in Canada and Europe, where he was instrumental in introducing improved production methods in the company's affiliated manufacturing plants that were producing such equipment. Mr. Neir was a painstaking worker, a believer in keeping complete and accurate records, and made systematic studies of factory and maintenance methods.

During all his active years he was generous with his time, suggestions and ideas in giving a helping hand to younger men coming along in the highly specialized career of telephony. Many men now occupying important posts with the company and in the operating end of the industry are grateful to him for that help, often given at a time when most needed.

During World War II, Mr. Neir took on the additional work of acting as official consultant on telephone equipment to the War Assets Administration as a recognized authority on costs and equipment valuations for operating or other corporate purposes. In 1937, he was the fourth of thirteen men of the Automatic group who have so far received the annual Talbot G. Martin award of the Strowger Auto-

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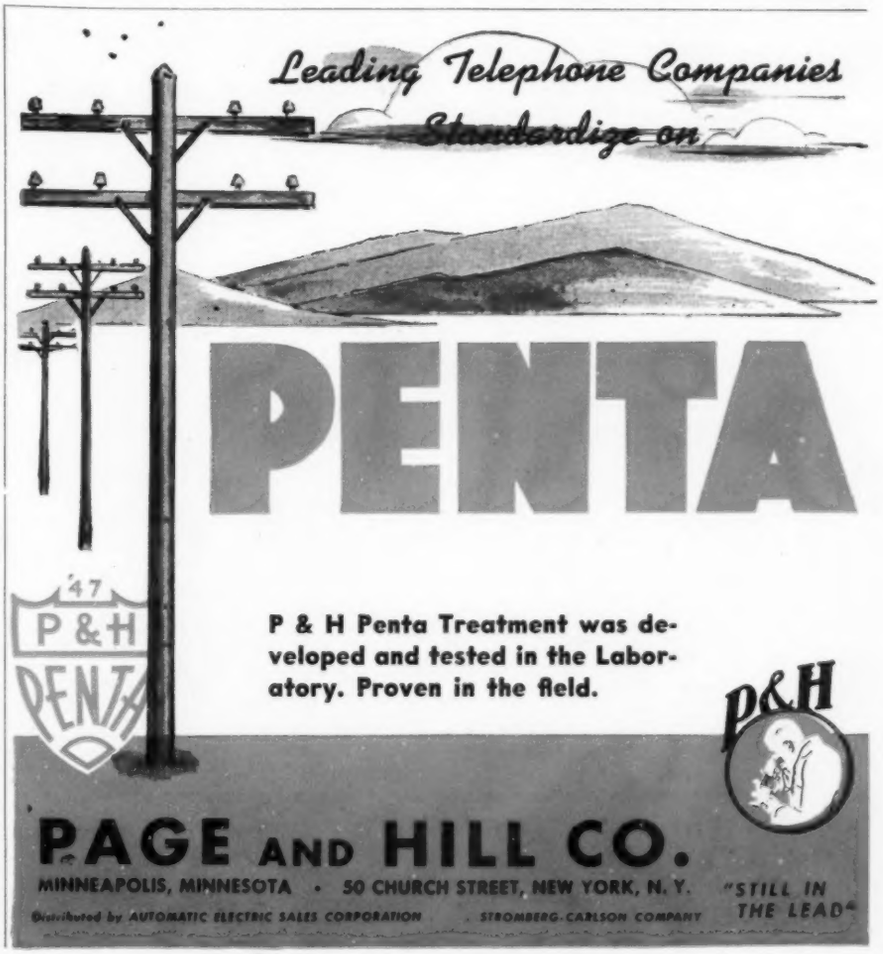
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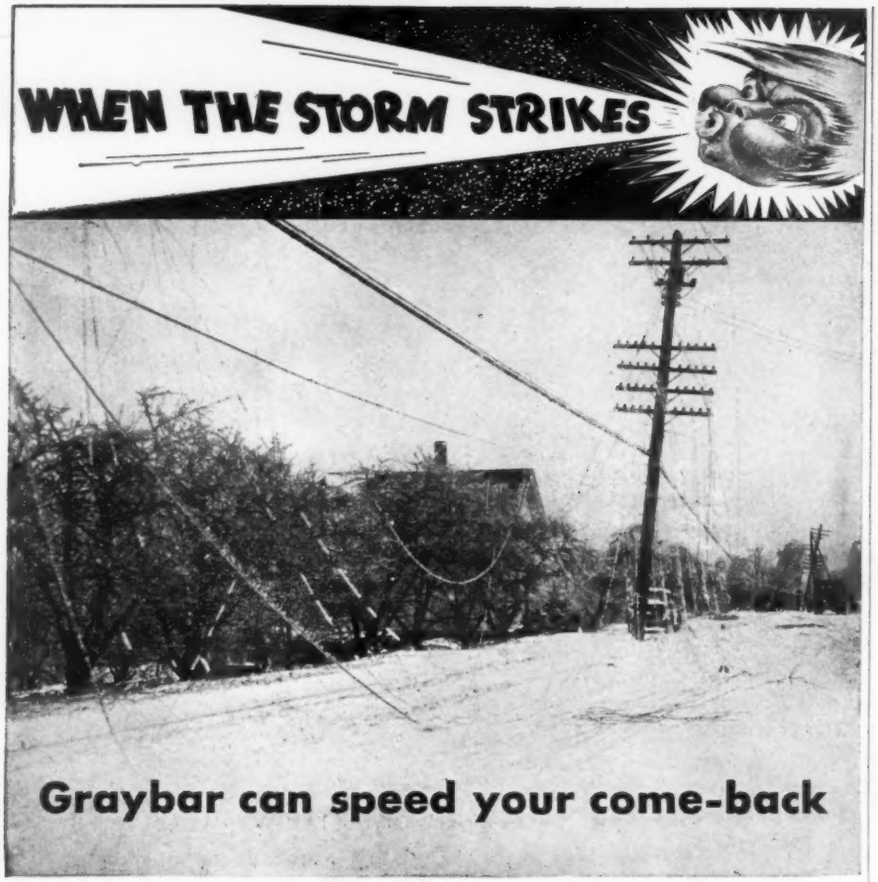

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matic Club for valuable contributions to the art and science of communications.

Earl Neir will long be remembered for such accomplishments in the field of telephony, but he will fondly be remembered also by thousands of persons who, through more than 40 years, came to know him and were impressed by his genial manner, his quick, easy smile and his quiet sincerity. On December 30, in Chicago, his former associates, executives and key personnel of Automatic Electric Company, honored him with a farewell testimonial luncheon, just prior to his departure for a new eastern residence.

With Mrs. Neir, he has purchased a home in Ocean City, New Jersey, and there with his books, his workshop and his radio, he will live in quiet retirement except, perhaps, for the occasional inevitable busman's holiday to discuss and to continue to improve and add to the science of telephony.

A. J. Eaves Elected Vice President of Finch

Augustus J. Eaves has been elected vice-president of Finch Telecommunications, Inc., of Passaic, N. J., manufacturer of facsimile broadcasting and

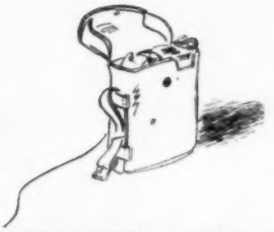
A. J. EAVES

receiving equipment and other electronic apparatus, it was announced recently by Captain W. G. H. Finch, president of the Finch Company.

John C. Larkin Has New Address

John C. Larkin and Company, accountants and auditors, have announced the removal of their office to 114 South Warren Street, Syracuse 2, N. Y.

Another Big Sale



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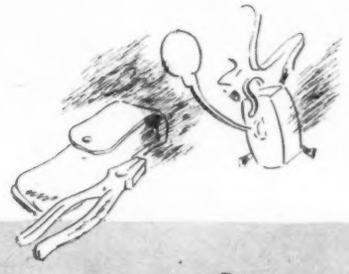

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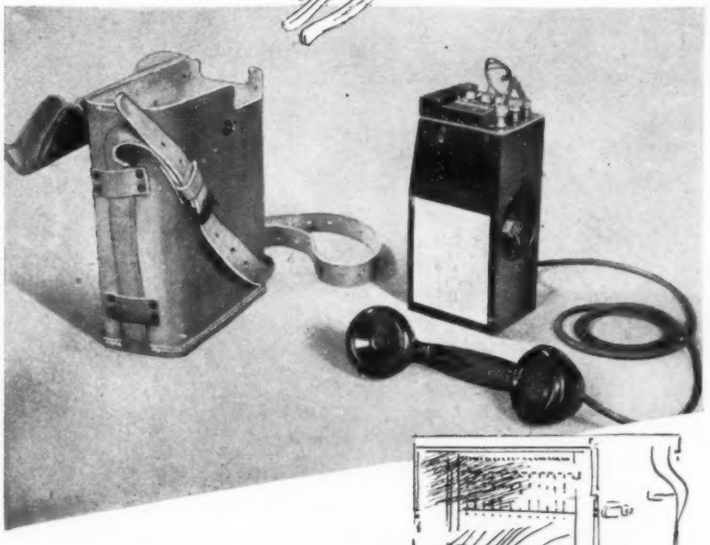

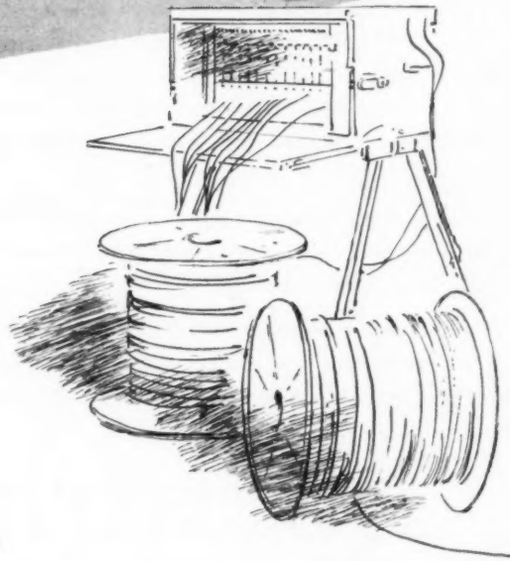

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The equipment and parts are unpackaged (although most cable is on reels), but will be packaged after sale, when necessary, for shipment.

A quantity of unused telephone communications cable of various sizes, recently returned from overseas, will be offered by bid sale. In order to make proper bid, inspection is advisable, due to damaged condition of reels.

All sales are subject to the standard condition of sales of the War Assets Administration and will be for cash, unless credit terms have been arranged.

This surplus property is announced concurrently at fixed prices to all priority claimants and to commercial users. 20% of this material has been reserved to fill orders received from Federal Agencies.

After Federal Agencies and certified Veterans' requirements have been filled, other orders received by February 10, 1947, will be filled in the following sequence: R.F.C. for resale to small business, state and local governments and instrumentalities, certified non-profit organizations and commercial users.

Veterans of World War II should apply at their nearest WAA Certifying Office for certifications; the case number and the locations of the Certifying Office must be stated in the Veteran's "Offer-to-Purchase."

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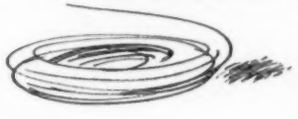

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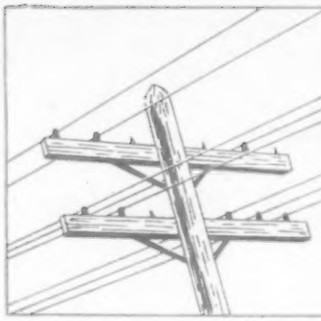


TELEPHONE ENGINEER Handbook Tables

Subject—POLE GUYING (Continued)

Index—Pole Line Design
Date—February 15, 1947

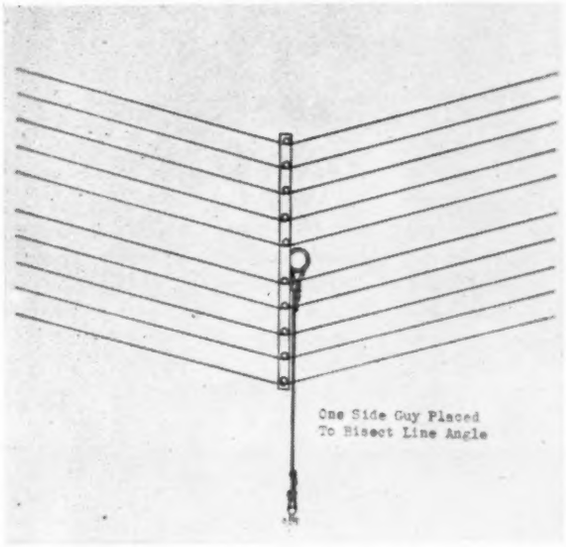


Fig. 4—Use of single side guy at corner pole in lines carrying less than 20 wires when pull is less than 50 feet, or carrying more than 20 wires when pull is less than 35 feet.

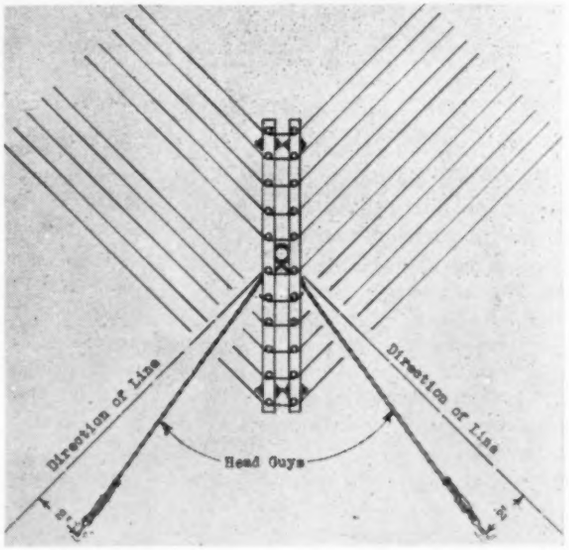


Fig. 5—Use of two head guys at corner pole in lines carrying less than 20 wires when pull is 50 feet or more, or carrying more than 20 wires when pull is 35 feet or more.

Table No. 7—Guy Strand Sizes Recommended for Pole Corners with Pulls of less than 35 Feet in Leads Carrying More than 20 Wires.

No. of Wires	L/H Ratio	Pull at Corner Pole: 2' & Under	4' to 5'	5' to 8'	8' to 10'	10' to 15'	15' to 20'	20' to 25'	25' to 30'	30' to 35'
	0.2	2.2M	6M	6M	6M	10M	16M	16M	16M	20M
	0.25	"	2.2M	"	"	"	10M	"	"	16M
	0.3	"	"	"	"	6M	"	10M	"	"
	0.35	"	"	2.2M	"	"	6M	"	10M	"
	0.4	"	"	"	"	"	"	"	"	10M
	0.5	"	"	"	2.2M	"	"	6M	"	"
22 to 30	0.6	"	"	"	"	"	"	"	6M	"
	0.7	"	"	"	"	"	"	"	"	"
	0.8	"	"	"	"	"	"	"	"	6M
	1.0	"	"	"	"	2.2M	"	"	"	"
	1.25	"	"	"	"	"	"	"	"	"
	1.5	"	"	"	"	"	"	"	"	"
	2 or More Guy to Stub Pole	"	"	"	"	"	2.2M	"	"	"
	0.2	2.2M	6M	6M	10M	16M	16M	20M	22M	26M
	0.25	"	"	"	"	"	"	"	20M	20M
	0.3	"	"	"	6M	10M	10M	16M	16M	16M
	0.35	"	2.2M	"	"	6M	"	10M	"	"
	0.4	"	"	"	"	"	"	"	"	"
	0.5	"	"	"	"	"	6M	"	10M	"
32 to 40	0.6	"	"	2.2M	"	"	"	"	"	10M
	0.7	"	"	"	"	"	"	6M	"	"
	0.8	"	"	"	2.2M	"	"	"	"	"
	1.0	"	"	"	"	"	"	"	6M	"
	1.25	"	"	"	"	"	"	"	"	6M
	1.5	"	"	"	"	"	"	"	"	"
	2 or More Guy to Stub Pole	"	"	"	"	2.2M	"	"	"	"
	0.2	2.2M	6M	10M	10M	16M	20M	22M	26M	30M
	0.25	"	"	"	"	"	16M	20M	22M	26M
	0.3	"	"	6M	6M	10M	"	16M	20M	20M
	0.35	"	"	"	"	"	"	"	16M	"
	0.4	"	2.2M	"	"	"	10M	"	"	16M
	0.5	"	"	"	"	6M	"	10M	"	"
42 to 50	0.6	"	"	"	"	"	"	"	10M	"
	0.7	"	"	2.2M	"	"	6M	"	"	"
	0.8	"	"	"	"	"	"	"	"	10M
	1.0	"	"	"	"	"	"	6M	"	"
	1.25	"	"	"	2.2M	"	"	"	"	"
	1.5	"	"	"	"	"	"	"	6M	"
	2 or More Guy to Stub Pole	"	"	"	"	"	"	"	"	6M

Roundtable LINE and DESK Discussions

Edited By
J. S. REED, JR.

Q. We understand that drop wire, with a special plastic coating, is now available and that the coating is highly resistant to abrasion and will not deteriorate under the influence of sunlight. Would you say that this kind of a drop wire could be used in situations of serious tree interference?

A. We have not as yet obtained sufficient information from field trials of neoprene jacketed and polyethylene covered drop wires to pass judgment on your inquiry. We believe, however, that the use of plastic coated wires may solve the problem of excessive wear of drop wire, due to contact with trees or shrubbery. The new drop wire is well liked by telephone workers, on account of its ease of handling and freedom from tar compounds that soil hands and clothing.

Q. We have recently been discussing the question of resetting poles. Under what circumstances can we reset poles?

A. When it is necessary to replace a pole on account of decayed butt, consideration may be given to cutting off the decayed butt and resetting the pole. This can be done if (1) at least the minimum required overhead clearances can be maintained; (2) no additional crossarms or brackets will be placed later on to reduce overhead clearance below the minimum permitted; (3) the pole itself is in good condition above the ground level; and (4) the change of grade is not made excessive. (In the last mentioned case, it may be possible to move the crossarms or brackets on adjacent poles to reduce the amount of grade change.)

Our opinion is that stubbing the defective poles will be the better course in most cases, since treated stubs can then be used and will last much longer. It is advisable to cut off and remove the pole butt before setting the stub.

Q. How would you install a detachable pole step on existing stepped poles without changing the arrangement of the present stepping?

A. If your poles are stepped, in accordance with standard practice as illustrated in Figure 1, it is only necessary to relocate the wooden step, as indicated, and then attach the lag and plate for the detachable step.

Q. What is the advantage of slab gains over the notched gain on poles?

A. Slab gains are claimed to possess the advantage of better drainage and more satisfactory appearance than notched gains. Another advantage that we see is that it is not necessary to gain the pole when the crossarms must be "short spaced" for greater clearance in certain situations.

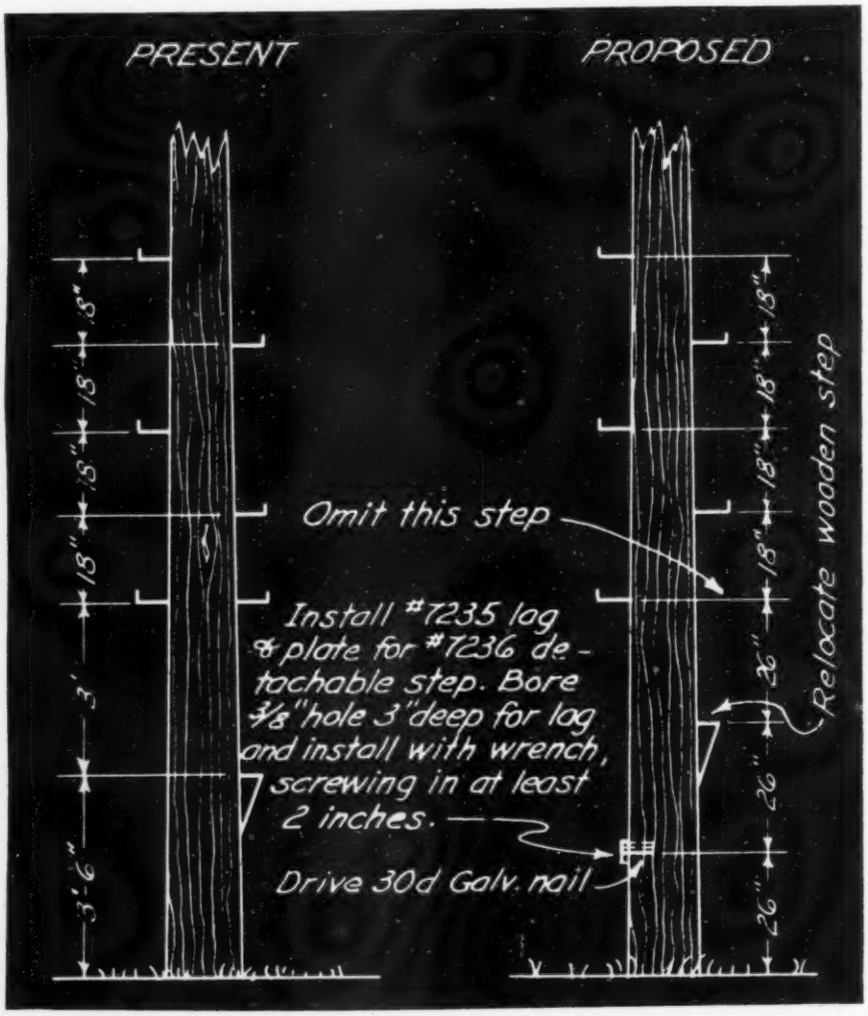


Fig. 1—Showing method of attaching a detachable step to an existing stepped pole.

MINNESOTA Convention

(Continued from page 51)

cent minimum. None of the bills seeks in any way to disturb our present 500-station exchange exemption."

Regarding telephone excise taxes, Mr. Bailey said the National Association had expected to attempt to obtain the complete removal of these taxes at the current session, but disposition of Congress to produce income tax reductions is operating to keep the excise taxes on the statute books. The indications are that Congress will vote a reduction in income tax levies and that the telephone excise taxes will be with us at least until July 1, 1948.

"The exact date of their removal will, of course," he said, "depend upon what the extension legislation now under consideration provides. . .

"We think it manifestly unjust for Congress in levying taxes to list such an essential thing as telephone service along with such items as liquor, fur coats, country club dues, jewelry, and other luxury items. But it is perhaps too much to expect Congress, composed as it is of men of diverse views, to be altogether consistent.

"Bad as the excise taxes are, it might be remarked that their removal will become of much greater importance to telephone companies after a bigger dent has been made in the number of held orders for telephone service and we are out again earnestly seeking new subscriberss."

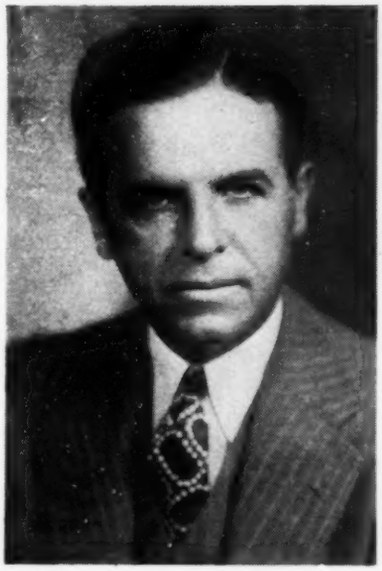
Mr. Bailey said that Senator Hill of Alabama has reintroduced his rural telephone bill.

"It is reported," he said, "that Congressman Poage of Texas plans to reintroduce his. The Patrick bill will be absent because the voters of Alabama decided last fall to retire Congressman Patrick to private life. The Hill bill would funnel funds for rural telephone use through the R-E-A in substantially the same manner as funds are now channeled to the electric co-ops.

"In a conservative Republican controlled Congress, bent upon retrenching in order to ease the terrific tax load now resting on the American people, it is easy to believe that rural telephone legislation has little chance of surviving. The industry itself is doing a fine job in solving the rural telephone problem, and it is not necessary to add to the powers of existing alphabetical agencies or to create a new one to deal with it."

Mobile Service

Mr. Bailey told the audience that



CLYDE BAILEY

use of the radio tool is something that must be visualized by telephone companies generally in order to make point-to-point telephone communication more universally available. . . Let us not assume that radio is only a pass-

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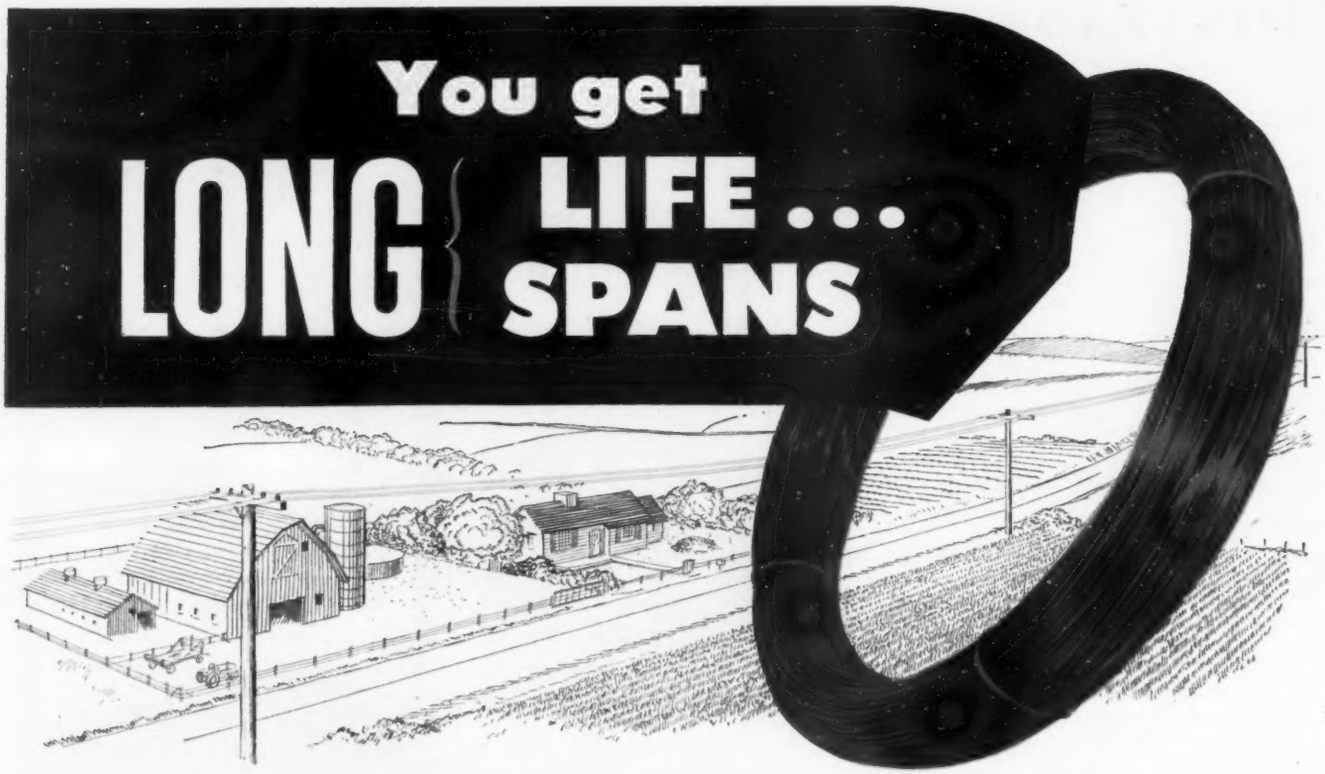

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ing phenomenon that will have no practical relationship to telephone communication.

"It already has a practical relationship. We must begin thinking in terms of the utilization of radio as a supplement to the wires, and must gear our thinking to plans that contemplate harmonizing radio with the wires and synchronizing it wtih our present operations.

"At the request of the telephone industry the Federal Communications Commission has made certain frequencies in the radio spectrum available to the telephone industry on a shared basis with other interests. Highway mobile radio telephone service, short haul toll service, service to the hard-to-reach subscriber across lakes and other bodies of water, were among the services contemplated by the Commission when it acceded to the request of the telephone industry for frequency allocations to it.

"Let us do what we can to avoid missing the boat so far as the use of radio frequencies is concerned. If the industry does not take advantage of these frequencies the Communications Commission will surely allow non-communication companies to use the frequencies and provide their own radio telephone service."

At the final session of Wednesday afternoon January 29, Secretary J. C. Crowley, Jr., presented an address summarizing "Do's and Dont's" applicable to telephone companies. He was followed by James Boyd, secretary Alexandria (Minn.) Telephone Co., who presented an address detailing the "Progress After Conversion To Dial Of A Small Exchange." Others appearing at the concluding session were: Kenneth Johnson, manager Bricelyn (Minn.) Mutual Telephone Company, who discussed "Acquiring And Improving Switched Service Stations"; A. L. Ericson, manager Hector (Minn.) Telephone Company spoke on the subject of "Developing Outlying Territory", and the final speaker H. B. Fine, manager, Minnesota Community Telephone Co., Waterville, discussed "A Few Suggestions Towards Better Service With Present Equipment."

Following the general discussion after Mr. Fine's talk, the 38th convention of the Minnesota Telephone Association was adjourned with everyone in attendance at the three day meet heartily in agreement that much good had been accomplished and that the convention was *"the best ever."*

THE END

Major General James A. Code Made Legion d'Honneur Officer

Major General James A. Code, Jr., vice president of Automatic Electric Company and chief executive of the Gary Group, was made an officer of the Legion d'Honneur on February 7, at the French Embassy at Washington. The decoration was presented by Lieut. General Maurice Mathenet.

The award of this coveted decoration comes as the culmination of a long and distinguished military career. Through 28 years of service with the Regular Army, General Code held every commissioned rank from Second Lieutenant to Major General. A native of California, General Code was graduated from the United States Military Academy on April 19, 1917. During the difficult years from December 1, 1941, until his voluntary retirement from the Army on December 1, 1945, General Code served as Assistant Chief Signal Officer, United States Army.

General Code has been awarded the Distinguished Service Medal and the Bronze Star by the United States Army. He also holds the degree of Bachelor of Science from the U. S. Military Academy and has been awarded the degrees of Master of Science and Electrical Engineer for his post graduate work at Scheffield Scientific School.

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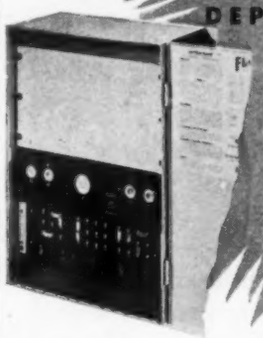

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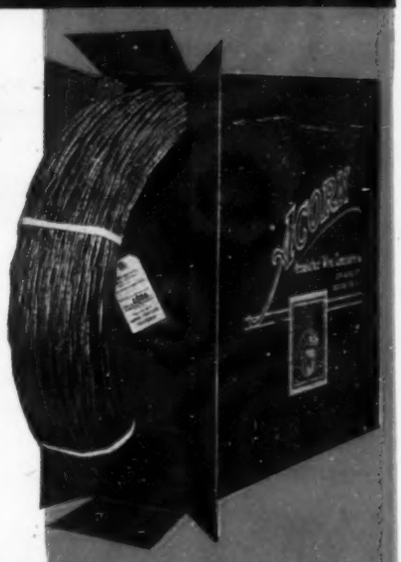

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International Harvester Observes 40th Anniversary

BEFORE several hundred members of the press from all parts of the United States and officials and department heads of the company, International Harvester on January 17 exhibited at Fort Wayne, Indiana, for the first time its new line of motor trucks. Included in the exhibit were Harvester's recently introduced "Western" models.

Members of the press, visiting Fort Wayne for the occasion, viewed the new models and a special presentation of the company's 40 year's of progress in the truck industry in a large exhibit hall where they were welcomed by W. C. Schumacher, general manager of Harvester's motor truck division.

The International Auto Wagon, produced in 1907 by the International Harvester Company, was the forerunner of the present line of International trucks.

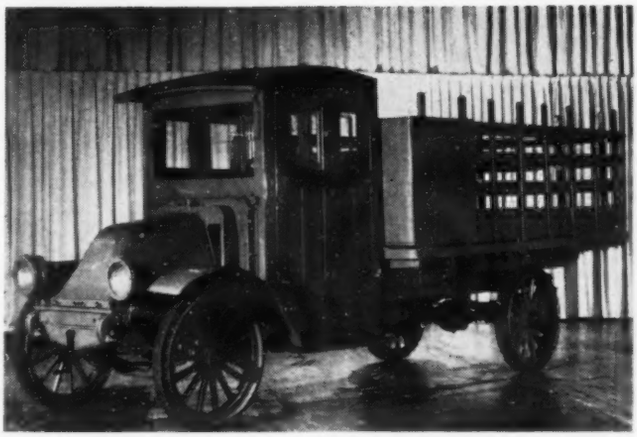
Harvester's manager of motor truck sales, W. K. Perkins, then told the audience that International Harvester was introducing new models now for two reasons: One, to provide operators with improved truck performance; the other, to provide operators with better looking trucks. He also stressed the fact that even though new models were being introduced, production has not been slowed down. "The old models," said Perkins, "rolled off the line right ahead of the new ones without any assembly line stoppage. Trucks are too badly needed to stop production for a single minute.

"Today," continued Perkins, "has a special meaning for International Harvester, quite aside from the fact that today we will exhibit our new models. Today is Harvester's fortieth anniversary as a truck manufacturer. Yes, forty years ago Harvester began production of the then impressive schedule of one hundred International auto wagons, high-wheeled, low-powered vehicles designed, as we then said, 'to pull the farmer out of the mud'. So before showing you our new 1947 trucks, we are going to show you four old Internationals, a 1907 auto wagon, and 1917, 1927, and 1937 models." In the order named the four old Internationals were exhibited.

"We ask you", Perkins continued, "to contrast these old Internationals with the new models you are about to see. The contrast will be marked, I promise you. But keep in mind that as antique-looking as the 1907 International Harvester auto wagon now is, it was glamor wagon in its day, and served American farmers and business men both profitably and well. And before the new 'KB' models are driven out, I'd like to tell you briefly how they were developed.

"Throughout our new truck line, in addition to the new styling, are 95 new features or mechanical improvements. All of these are contributions to improved performance, longer life and greater economy. But International models are not matters of the calendar. New features and improvements are under constant study and constant test. As quickly as a new feature or improvement proves its worth, it is incorporated into current production. That's the way these new Internationals were created. New features and improvements were steadily incorporated into current production until the features and improvements themselves, with some new styling, created the new models.

"These new models were put on our assembly lines without any interruptions in production, for which our engineering and manufacturing departments most certainly deserve a word of praise. The fact is, our



This 145-inch wheelbase, International 1½-ton dump truck was built in 1917.

International 159-inch wheelbase Model KB-5 with 12-foot panel stake body.

manufacturing department broke all previous production records during many of the weeks just preceding the day on which production of the new models started."

Mr. Perkins also called attention to the fact that there are 21 basic models in the International truck line —15 "KB" models and 6 "W" or "Western" models. The gross vehicle weight ratings of these 21 models range from 4,400 to 90,000 pounds.

"Notice that I said 'basic models'," said Perkins, "I said 'basic models' because job adaptations and conversions of the 21 models produce more than 1,000 different transport units, all of which might be called models; it may be truthfully said that in the International line today there are more than 1,000 different vehicles".

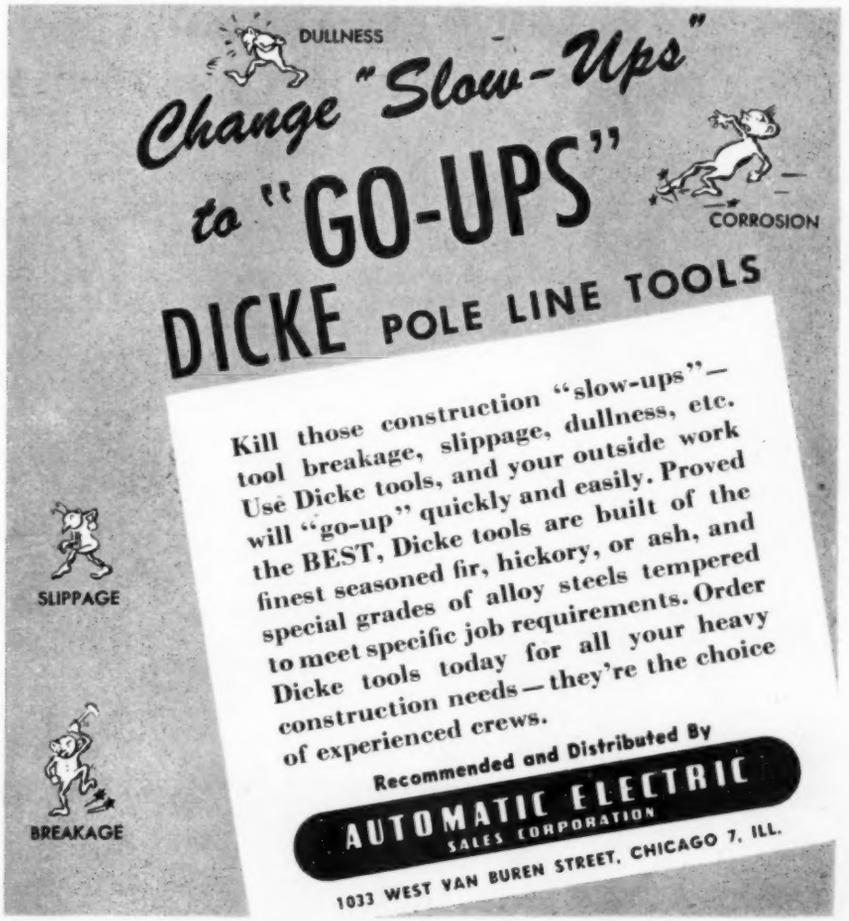
The first of the new Internationals shown was the smallest unit in the line, the model KB-1 with a pickup body. In order of size then came the others with the last a W-3042-H, one of International's six recently introduced "W" models.

Mr. Perkins then pointed out that all of International Harvester's truck plants were represented by the display. That the models KB-1 through KB-5 had been built at International's Springfield, Ohio works; the models KB-6 through KBR-12 at the company's Fort Wayne works; the "W" models at the Company's Emeryville, California works; and that the engines except for a few of the heavier models at the Company's Indianapolis engine works.

The first comments of press representatives and other guests about the new International line, were about the styling of the light-duty models. From the front, these models display almost passenger car elegance. Extensions of the chrome radiator grille flow out over the fenders in graceful curves. Above the grille is the well-known International truck Triple Diamond emblem in a newly-styled setting. At the top and front of the hood is a striking ornament. At the sides of the hood the name, International, appears newly designed in chrome, with the model number of the vehicle beneath. Styling of the heavy-duty models, while less elaborate than that of the lighter units, shows the same modern trend.

Supplementary exhibits, comprehensive visualizations, demonstrated International Harvester's procedures and methods for adapting International's basic models into trucks that are expertly engineered for the jobs they are to do; the company's service training programs for dealers' and operators' mechanics; its parts and accessories merchandising and packaging programs; and its dealer building or "base of operations" program.

A brief address by P. V. Moulder, executive vice-president of Harvester was a feature of the luncheon program. Following luncheon, the party was conducted through Fort Wayne works. The plant tour completed, the guests were taken to International's truck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Good workmen know that there's no substitute for experience. It is the years of expert craftsmanship back of every piece of Klein equipment that make Klein belts and safety straps—Klein climbers and grips—Klein pliers and wrenches the first choice of linemen today as they have been "since 1857."
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proving grounds where the new models were put through their paces on the "twist course", the "Belgian blocks", and similar severe tests.

A dinner, with an address by J. L. McCaffrey, president of the International Harvester Company, as the high spot, concluded the day's program.

◆

S. B. Williams Joins Sylvania Electric Staff

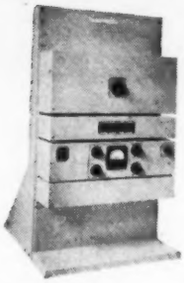
S. B. Williams became manager of Customer Relations for the lighting division of Sylvania Electric Products Inc. effective January 1, 1947 according to an announcement by B. K. Wickstrum, general sales manager. For the past eight years he has been editor of the *Electrical World*.

Mr. Williams is well known in the electrical publishing field having spent most of his editorial career with McGraw Hill Publishing Company since

S. B. WILLIAMS

his graduation from Princeton in 1914. In addition to serving as editor of *Electrical World*, he had previously been assistant managing Editor and managing editor. He also served as editor of *Electrical Record* and editor and general manager of *Electrical Contracting*.

Active in the public utility and illuminating branches of the electrical industry, Mr. Williams is a member and a past president of the Illuminating Engineering Society; a member of the American Institute of Electrical Engineers; a past chairman of the New York Business Paper Editors Association, and a former director of the Chicago Business Publishers Association. For several years past, he has served as secretary of the Committee of Awards for the James H. McGraw Awards for Electrical Men.



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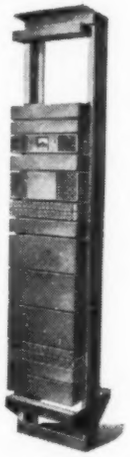
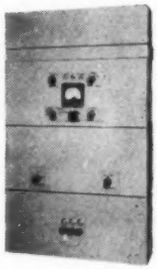
Gives one additional speech channel over existing open-wire lines. Normal range—up to 300 miles without repeaters.

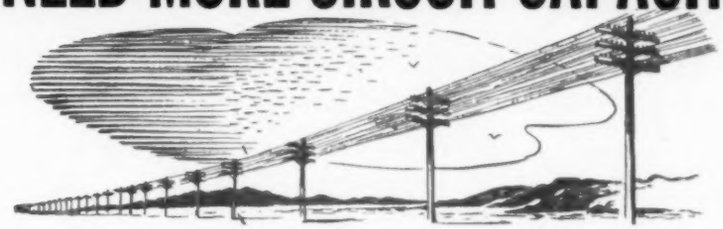


FTR 9-B-1
Three-Channel Carrier
Gives three additional speech channels over existing open-wire lines. Normal range — up to 200 miles without repeaters.



FTR 9-C-1
Speech-Plus-Duplex Telegraph Carrier
Gives duplex teleprinter channel over telephone or radio circuit (two over carrier telephone channel) retaining speech facilities — up to 100 words per minute — distortion minimized by frequency modulation.

NEED MORE CIRCUIT CAPACITY?



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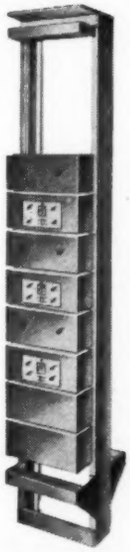
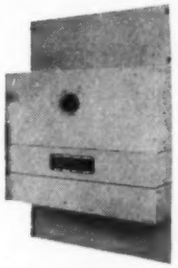


FTR 9-E-1
Multi-Channel Carrier
Provides from 1 to 18 voice-frequency telegraph channels — up to 100 words a minute — over telephone facilities.



FTR 9-F-1
Single-Channel Carrier
Second Story
Physically and operatively similar to 9-A-1 but operates at higher frequencies. Occupies spectrum above normal single channel systems. Normal range up to 200 miles without repeaters.

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THE RATES for this department are as follows: 10c a word, cash with order, please. Box number service if desired. We run ads for veterans free of charge. For display advertisements ask for rate card.

WANTED—Man with some knowledge of automatic telephone exchange equipment layout to be trained in Chicago for engineering work in this field. Write Box 8480, c/o Telephone Engineer.

WANTED: By Class A company. Outside plant supervisor with knowledge of Strowger dial equipment. Write K. W. Mohr, General Manager, Monroe County Telephone Co., Sparta, Wisconsin.

WANTED: Cable Splicer. A Class "A" midwestern telephone company has opening for a first class cable splicer, at $1.69 per hour. This is both construction and maintenance work. Write giving age and reference to Box 8483, c/o Telephone Engineer.

WANTED: Supply salesman to handle Middlewest territory for Chicago distributor. All correspondence will be confidential. Address Box 8478, c/o Telephone Engineer.

WANTED: General Superintendent for large Independent Telephone Company located in the Middle West. This is a position requiring proven administrative ability. Please give full information regarding experience. Above average salary for the right man. Inquiries will be treated confidentially. Write Box No. 8474, c/o Telephone Engineer.

WANTED—Young man with some experience in analysis of electronic, telephone or remote control circuits who has an ambition to specialize in circuit work. Location in Chicago. Write Box 8481, c/o Telephone Engineer.

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A large company in the middle west has a position open for an experienced telephone accountant. This opening is particularly suited to a young man with only a few years experience in this field, but interested in an opportunity for advancement. Complete details as to your age, expected salary and qualifications should be given in your reply. Write Box 8475, c/o Telephone Engineer.

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Buzzer switch-board, W. E. No. 7EW. 10 to 20 volt	$1.00
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FOR SALE—Immediate Delivery: No. 22-2 Conductor tinned copper, rubber covered, braided olive green twisted interior wire $11.15 per 1000 feet. No. 17-2 Conductor twisted pair bronze drop wire Neoprene jacketed $22.50 per 1000 feet. Address Telephone Repair and Supply Co., Rogers Park Station, Chicago 26, Illinois.

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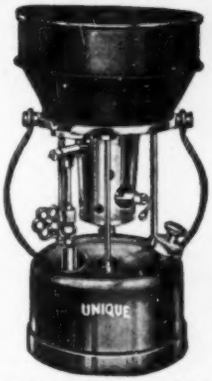

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SH	SBG	SGF	TAY	CBE	CEB
SJ	SBH	SGH	TBL	CBM	CEC
SL	SBX	SGJ	TBN	CBY	CEQ
SN	SDE	TB	TBQ	CCC	
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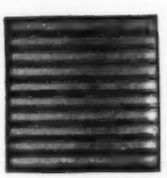

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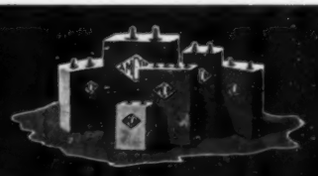

Telephone Sales Field Representatives

The FEDERAL TELEPHONE AND RADIO CORPORATION, an associated company of the International Telephone and Telegraph Corporation, located in Clifton, New Jersey is desirous of securing the services of qualified Field Representatives for positions in its Telephone Sales Department.

Preference will be given applicants between the ages of 28 and 45, who have had at least five years experience in Telephone Dial Switching, Equipment Engineering, Installation or Maintenance Work. Applicants should be willing to spend at least 50% of their time travelling, or to live at any point in the United States, designated by the Corporation as their headquarters.

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Manufactured to exacting specifications, utilizing advanced techniques and modern equipment under positive laboratory control.

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what more could you ask?"

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MAKERS OF POLE LINE MATERIALS SINCE 1894

American Coach & Body Advances H. F. Berghaus

Allen T. Greiner, president of The American Coach & Body Company, has announced the election of Harvey F. Berghaus to the board of directors and as vice president in charge of manufacturing. Mr. Berghaus will continue his present duties as assistant secretary of the company.

His first official connection with American Coach & Body was during the summer of 1928, when he worked

HARVEY F. BERGHAUS

in the plant as a drill press operator. From that time until 1934, he attended Case School of Applied Science, after which he took a permanent position with the company in the inspection department. Mr. Berghaus worked up through the engineering and sales departments, and in connection with the latter, did special field and contact work. Since 1939, he has been doing estimating on both standard and special equipment, and during World War II set up a production control department. After the war, he became, in succession, production manager and assistant plant manager.

Mr. Berghaus has actually grown up with American Coach & Body, for, as a young boy, he used to play around in the original American Coach & Body plant. In those days, each order was for a special, hand-made body, and A. C. & B. had only 50 employees. Now, American Coach & Body Company is a leading utility body manufacturing concern, serving telephone, power, light, gas, and water companies. Berghaus saw the company grow from 1 plant to 3 plants, then the move to its present location occupying close to 300,000 square feet of floor space.

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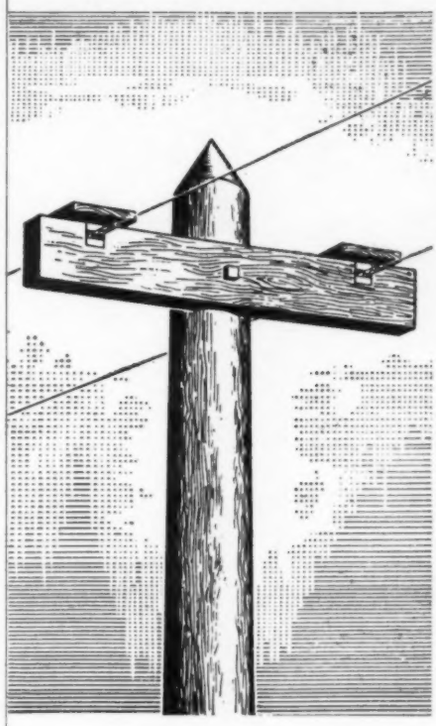

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Morse's first telegraph line

At the poles of the first telegraph line, notched crossbars carried the wires. At the notch each wire was wrapped in cloth saturated with gum lac. Small flat pieces of glass were inserted above and below wires and a wooden cover protected the wire from rain and held it in place.

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Write for Your Copy

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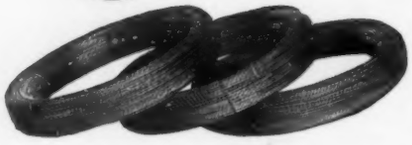

THE BACK OF THE BOOK

By JOHN G. REYNOLDS
Managing Editor

TIP FOR NEW TELEPHONE MEN

A returned veteran, with plenty of Signal Corps experience recently became a full fledged Independent telephone man. In a letter to us he recently explained why he chose the Independent telephone field. His letter contains so many well expressed thoughts that we thought you would be interested in seeing it.

In part the letter states: "I am not one to minimize the importance of financial reward, nor do I see how any normally ambitious man could be content with a job that did not offer opportunity for progress and achievement. But they are only part of the answer to what I consider the all-important questions a person must ask himself. . . . How well will I like this job? Will I enjoy going to work, enjoy making it a part of me, be so eager about it that I will frequently hate leaving it at the end of the day? Or will it be tiresome drudgery at which I will work conscientously, but only because it brings me a good pay check and a chance at promotion.

"In my opinion most job failures are caused by unhappiness with the job itself. Men think it is work and hate it. No wonder they are passed over when promotions are made with a resulting increase, leaving bitterness against their boss and more successful co-workers."

• • •

MISCELLANY

Out of Joe Byrnes' Wisconsin State Telephone Association Newsletter comes this bit of commonsense: "Change is an easy panacea. It takes character to stay in one place and be happy there." . . . SOMEWHERE we've heard this story before. An employe of a large telephone company was visiting in Arkansas and stopped to talk "shop" with the owner of a small rural telephone company. After a while, the visitor bragged about the length of the lines owned by his company. The rural manager pondered for a moment and then replied, "Waal, this hyar company's lines maybe ain't so long as your company but you can talk just as far on 'em!" . . . Another story from out Indiana way concerns a report received on an employee's accident. The one received by the Traffic department read:

"As employee was descending stairs, she turned to talk to another person, caught hell, and fell."

Word meant was heel.

• • •

THOUGHT TO REMEMBER

In these days when some folks are having a time ridding themselves of the little discourteous ways they contracted back when the *"Don't you know there's war on?"* idea was the vogue, here's a thought that should work:

"A company whose representatives are steeped in the ways of courtesy own a gold mine of good will. To the salesman, dealing continually with people, courtesy is an invaluable stock in trade. Even seasoned salesmen are grateful for hints on sales courtesy.

"Courtesy is playing the game of human relations according to the rules and observations approved and practiced by the educated people of your clientele. A buyer may be gruff, sarcastic and boorish, but he expects the salesmen to be otherwise in dealing with him. If they're not polite, chances of selling him are poor. The most successful salesmen are invariably the most adaptable in human relations."

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RAILROADS SPEAK THEIR PIECE!

Railroad executives appearing before the Interstate Commerce Commission in recent rate hearings, revealed the fact that telephone companies are not the only utilities endeavoring to operate with antique rates.

Hugh Crane, writing in THE CAR-BUILDER, recently stated the railroads' case as follows: "The railroads are apparently in for a period of profitless prosperity. Costs are up about 50% while rates aren't up at all. And that's an unbeatable squeeze!

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